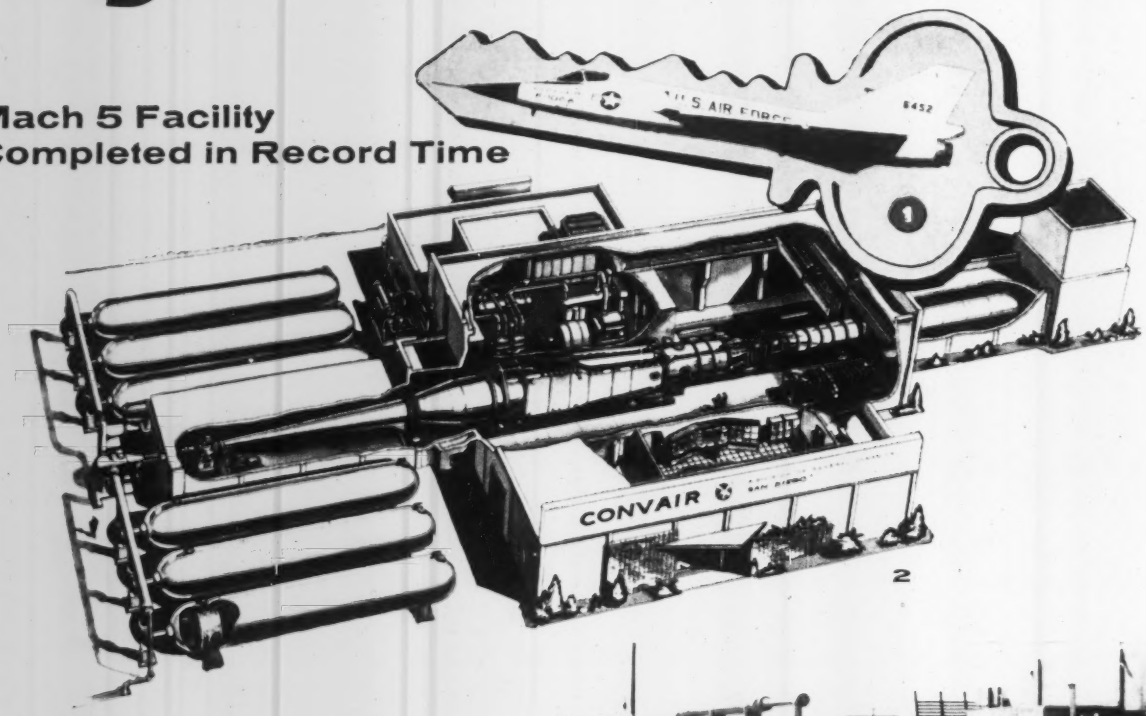
ENGINEERING NEWS-RECORD

Prestressed towers carry Europe's longest span p.41

A McGRAW-HILL PUBLICATION

CB&I turns the key on construction of Convair Supersonic Wind Tunnel

Mach 5 Facility Completed in Record Time



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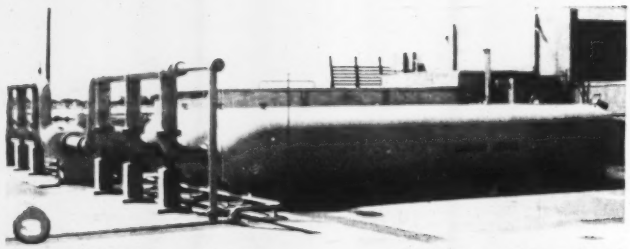

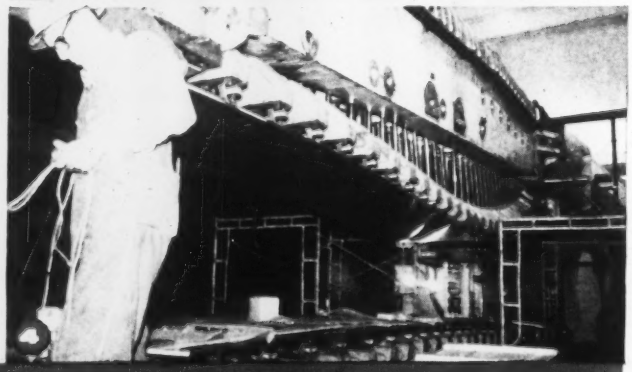

CB&I specialists, working in cooperation with *Flui Dyne* Engineering Corporation, handled the engineering, fabrication and assembly of this country's first "turn-key" supersonic wind tunnel. Built for Convair Division of General Dynamics Corporation, the intermittent *blow-down* type tunnel is capable of simulating speeds that range from Mach 0.5 to 5 (five times the speed of sound).

This $3,500,000 project for Convair is one of several supersonic test facilities in which the coordinated facilities of CB&I are playing a major role. These same engineering, fabrication and erection services can provide *you* with the benefits of *one source craftsmanship in steel*—with which CB&I has served industry, science and government for almost seven decades. Write our nearest office for a copy of the *Convair Story*.

E-2C-B

1. F-106 A **Delta Dart,** supersonic all-weather interceptor being manufactured by Convair for the United States Air Force.

2. Sketch shows major components of CB&I-built 3,700 MPH wind tunnel at Convair plant, San Diego, California.

3. Six CB&I-built tanks store air at 600-psi for intermittent blow-down type tunnel.

4. Tunnel "throat" or nozzle is comprised of flexible plates to generate flow from Mach 1.6 to 5—was precision assembled to few thousandth of an inch accuracy.

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When it comes to heavy-duty power, you can't beat a Murphy Diesel. Ask W. O. Pelphrey of Ft. Worth about the performance of his 225 HP (continuous) Murphy, powering a secondary that's big by any standards.

Any Murphy Diesel owner will tell you the same—Murphys are built for heavy-duty service to deliver steady, more uniform power at more economical operation costs, with plenty of reserve for the heaviest demands. They start easier, run cooler, and deliver trouble-free service day after day.

Ask your Murphy Diesel Dealer about the profit advantages of Murphy power on your job.

407N

In addition to this truck-mounted Murphy Diesel shown handling the power requirements of Texas' biggest roll crusher, W. O. Pelphrey Construction Company uses a 177 HP (continuous) Murphy to power the portable primary in the background. They have a total of seven Murphy Diesels in service.

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Murphy Diesel engines and power units are available in sizes from 96 to 264 H.P. with engine speeds of 1200 and 1400 rpm. "Packaged" generating units are available with capacities ranging from 64 to 165 K.W.

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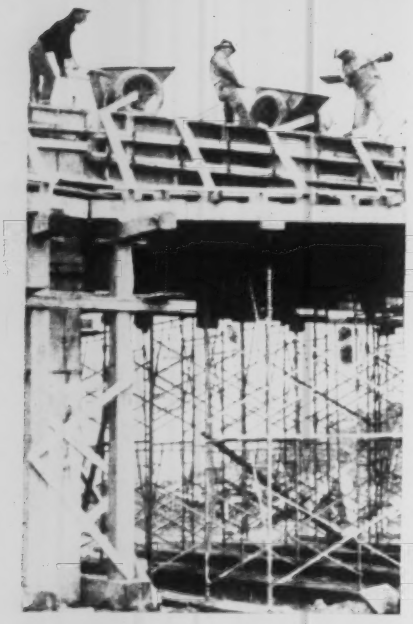
Bridge Forming



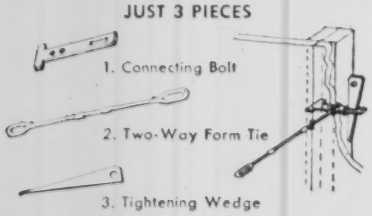
Symons Forms Cut 100 Days Off Bridge Forming Job

Ease of Erecting and Stripping Reduces Pouring Time

Contractor Lee Hoffman, Beaverton, Oregon, was given 320 days to pour 4,000 cubic yards of concrete for a bridge over Myrtle Creek in Oregon. Job was complete in 220 days or only ⅔ the time allotted.

Harry Pajutte, Chief Engineer for Hoffman, credits the ease of erecting and stripping Symons Standard High Strength Forms with contributing substantially to cutting pouring time, reducing number of men required on job, and providing greater mobility for the pouring equipment. Only

JUST 3 PIECES



3,144 square feet of panels were required for the 160,000 square feet of forming.

Symons Forms, Shores and Column Clamps can be rented with purchase option. Facts on Symons products and engineering service available upon request.

Symons

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EIGHTY-FIFTH YEAR OF PUBLICATION

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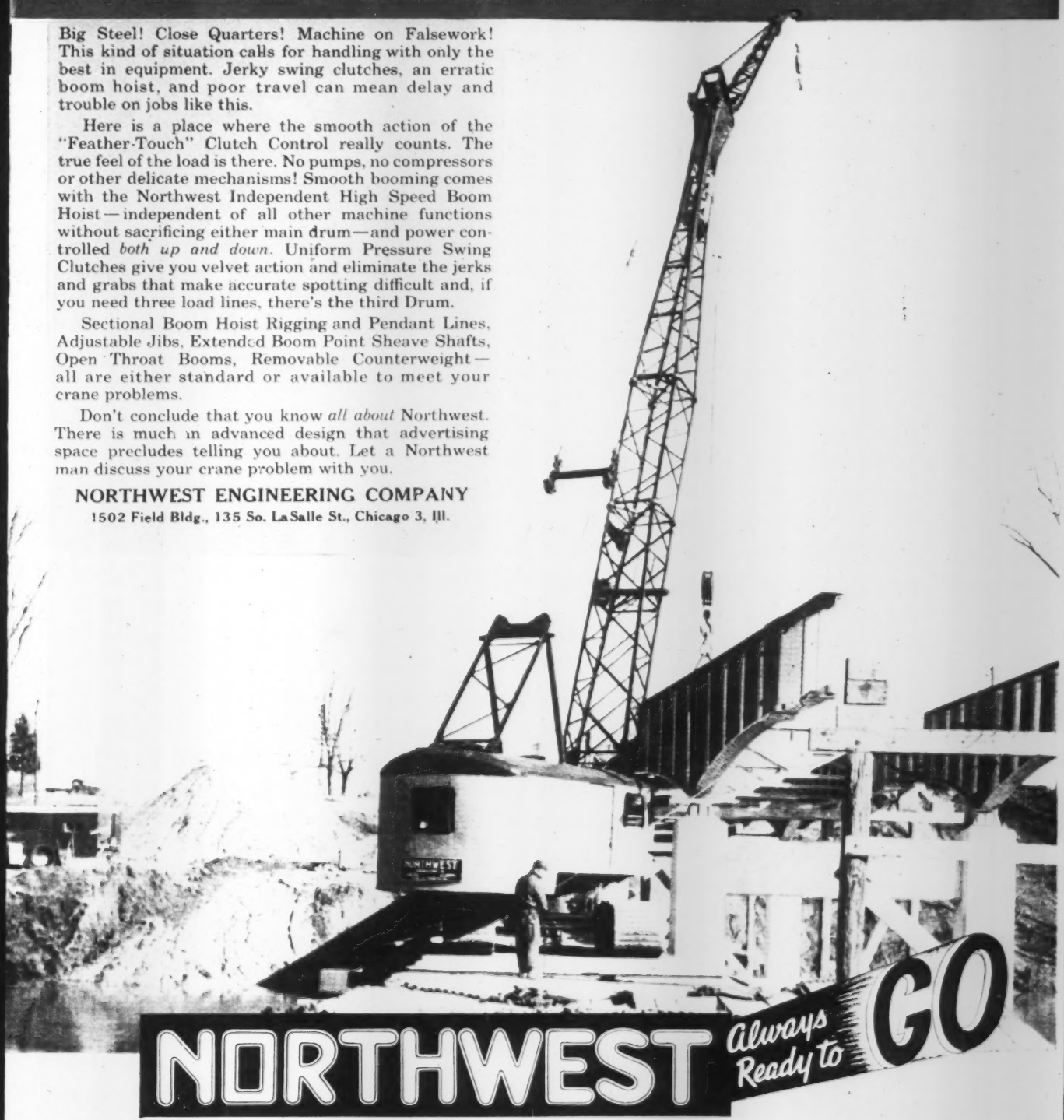

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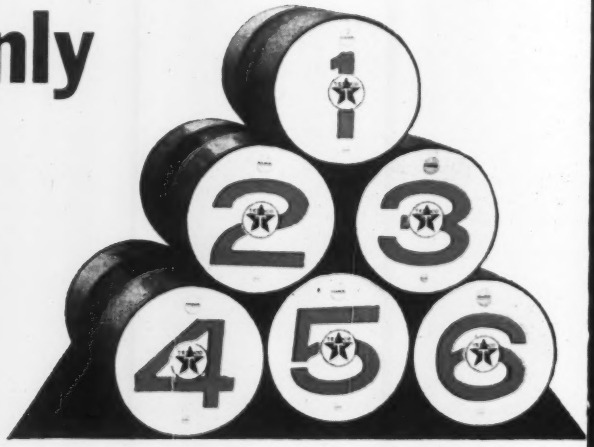

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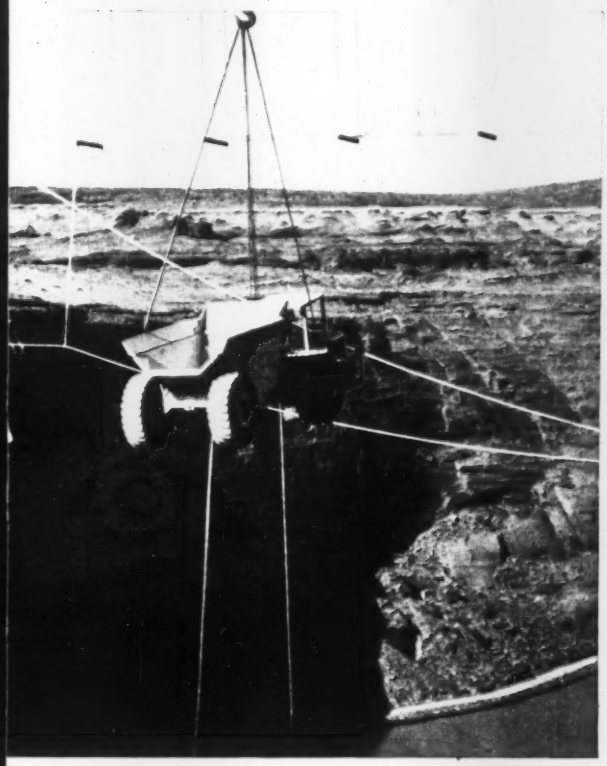

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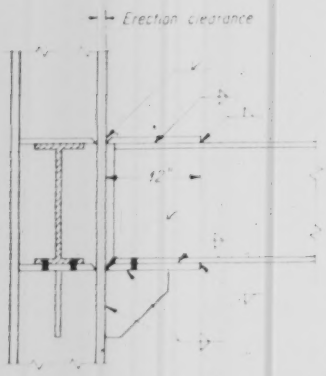
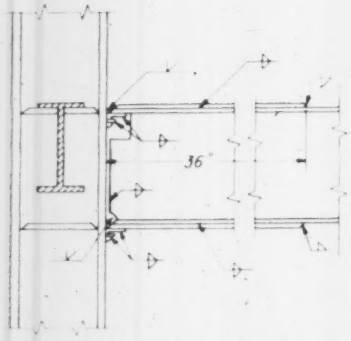
(PARTS, INVENTORY, PRODUCTION, DOWNTIME, MAINTENANCE)

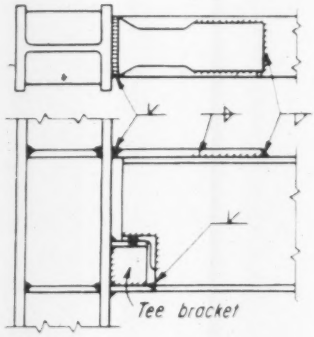
Which Welded Connection Is Best?



A Easy erection, with end clearance and splice plates, is the main idea here.



A-B Lower cost, with a better joint, is the idea in this revised design.



C Now an engineer proposes this method to avoid excess stress in welds.

Safety in Connections Comes First

SIR: Safety in welded connections is a much more important matter than the need for minimum and simple site welding or easy erection procedure. Your editorial comment about disagreement on this subject (ENR Nov. 20, 1958, p. 124) seemed most apt, particularly the doubt that you express about the safety of some types of connections.

I consider that connection types A and B (ENR Jan. 2, 1958, p. 12) are definitely not so safe in the average conditions of multistory buildings as the more familiar bolted and riveted connections. Unfortunately, welding firms on both sides of the Atlantic have inferred that connections of this type are satisfactory as typical details. Actually, they should be considered only for particular cases.

Specifically, it isn't good practice to make a weld at a point where maximum shear occurs and where maximum moment may also occur due to the extreme stiffness of the connection. This applies particularly at the lower levels of a high building, where the columns are relatively very stiff.

There are two ways that design moment at this connection can greatly increase above normally computed values.

The first arises if the column connections suffer a relative vertical movement, as during an uneven foundation settlement. With buildings on cohesive soils, and to a less extent on piles, there is now much data showing that relative settlements are far greater than previously believed. Also, consider that in the past panel walls have equalized column loads to a certain extent. Curtain walls, without this stiffening effect, must now be taken into account. In this first case, of relative column movement, and especially for stiff columns, the additional moment at the beam-column connection will approach:

$$M = \frac{6EI\Delta}{L^2}$$

where Δ is the relative difference in level of the two beam ends.

The second case applies more to upper parts of high buildings without stiff panel walls and can happen when one column has its full superimposed load and the other has none. If the axial compression of columns in the Empire State Building is taken as 5 in. in 1,000 ft, it's easy to see the possible effect on a framework of more usual height should one column carry much less load than another. Very high stresses will result in these welded connections for quite small values of Δ. Neither connections A or B can accommodate these moments.

On the other hand, neither case of increased moment is likely to occur to more than a limited extent with ordinary bolted connections and only partly with split-T wind connections.

The difference in level of two columns 100 ft above ground is 0.24 in. if one has a mean axial compressive stress of 6,000 psi and the other is stressed to 12,000 psi. At this height in a building the columns may be rather flexible; the end restraint moment for a 24-ft-span beam with connections A or B may be only:

$$M = \frac{4.5EI\Delta}{L^2}$$

For a 16-in. I-beam, this would give a stress 4,100 psi, double that if 200 ft above ground and eight times that if the span is only half as long.

• **Plastic theory solution**—I have submitted connection C as a solution to prevent possibly dangerous excessive moment. The top plate is detailed so that under the effect of excessive restraint moment, the top plate reaches yield. This prevents moment increase and consequent overstressing of the weld. I would appreciate hearing other readers' comments about these designs.

I do not agree that there is a notch in connection A-B that will cause undesirable stress concentrations, but only criticize it on the same grounds as types A and B.

• **Site welding standards**—In making

Welded Connections: Who's Said What So Far

When—'58	Who	What
Jan 2, p12	California designer	Choosing a typical moment connection
May 8, p14	Texas steel erector	An alternate typical connection
June 5, p8	Canadian professor	Practical connection requirements
June 5, p11	Florida engineer	A matter of cost, fabrication and field work
Aug 21, p34	Baltimore engineer	Saving money with a better connection
Oct 23, p9	New Jersey builder	Disputes Baltimore engineer's design
Nov 20, p124	ENR Editorial	More information needed; it's a question of safety, too

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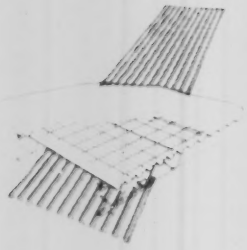

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RD 168

. . . Reader Comment

welded connections, it's best to avoid welding beams between two rigidly fixed parts of the framework. And welding should preferably be done from building center out toward the perimeter.

Certainly all site welding should be downhand. Also, temporary bolts (and clips if necessary) are highly desirable. This way, erection can proceed without risk of instability before welding. It should be possible to plumb the steelwork before top-flange welds are made. That is, the frame should be slightly flexible at that stage.

DONOVAN H. LEE
Consulting Engineer
London, England

Airport Aid

SIR—I want to congratulate whoever wrote the article "How Much Aid Do Airports Need?" (ENR Feb. 19, p. 25) for what is perhaps one of the most objective stories on the question of airport aid now before the Congress. I am even more impressed by the fact that such an article would appear in an engineering publication whose subscribers certainly have a vested interest in airport construction programs.

I am sure many of your readers do not share my views, and your article is a clear demonstration of what I consider accurate reporting.

F. R. QUESADA
Administrator
Federal Aviation Agency
Washington, D. C.

Italian, Not French

SIR—The article "Mud Holds Deep French Walls" (ENR Nov. 20, 1958, p. 51) describes the French use of special mud techniques to hold deep trench walls. It also gives the impression that French engineers used this technique in construction of the Milan subway. Impresa Costruzioni Opere Specializzate, of Milan, Italy, is the only company involved in construction of Milan's subway. This company first began using mud mixtures in 1950 for construction of bulkheads and cut off walls and holds a patent for excavating tools used in such operations.

CHRISTIAN VEDER
Foundations Consulting Engineer
Opere Specializzate
Milan, Italy

Reader Comment continued p. 12

Engineering News-Record welcomes expression of opinions from its readers. Comment should be as brief as possible and pertinent to subjects of current construction importance. Letters should be addressed Editor, Engineering News-Record, 330 W. 42nd St., New York 36, N. Y.

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New Barber-Greene 7′ Wheel Ditcher crowds through rugged caliche in Texas—at speeds many times greater than ladder ditchers or back hoes working in the area. Write for details.

NEW 7-FOOT WHEEL DITCHER

digs more ditch . . . deeper ditch than any machine in its size range

Barber-Greene's new 7′ wheel ditcher offers more ditch for the money than ever before. It digs deeper than any wheel ditcher in its size and price range.

Check these advantages:

Advanced design. Greater maneuverability—smaller, more compact than other wheel ditchers digging to 7′. The only wheel ditcher available with point of balance at center of tracks.

Costs less to operate—exclusive Barber-Greene design advantages add up to more ditch per day with less maintenance . . . less down time . . . less wear.

Full range of crowding speeds—exclusive Barber-Greene Hydra-Crowd provides infinite range of crowding speeds . . . permits top digging capacity in all conditions.

Easier to operate—full hydraulic controls within easy reach means less operator fatigue . . . easiest steering . . . greater accuracy.

All-hydraulic spoil conveyor—10′ variable-speed conveyor loads directly into trucks . . . handles spoil at speeds to 640 fpm. Folds to 8′. Rubber impact rollers reduce belt wear, eliminate material build-up beneath belt.

New, compact size—only 26′5″ long, 8′6″ high in operating position, 7′ wide across tracks.

59-10 D

These are just the high spots. Ask for complete details.

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CONVEYORS . . . LOADERS . . . DITCHERS . . . ASPHALT PAVING EQUIPMENT

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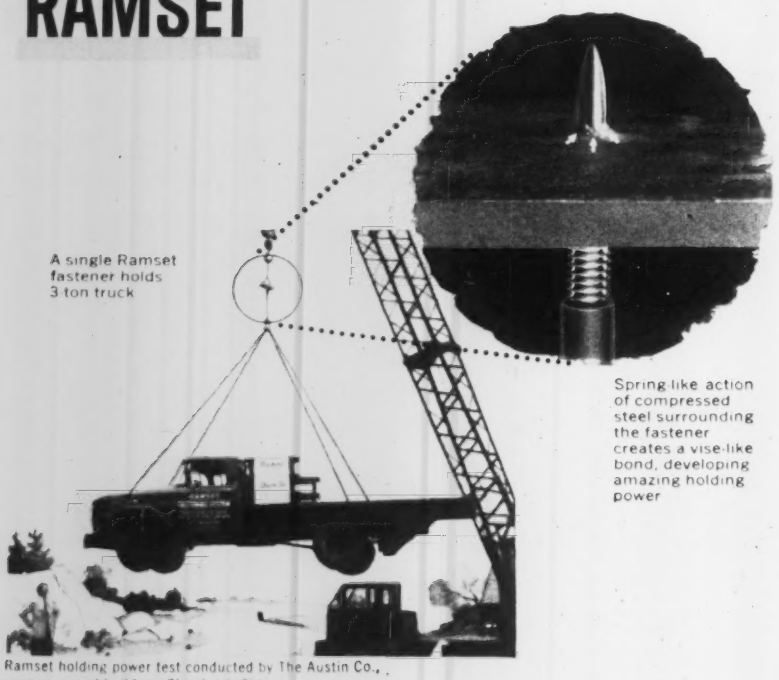
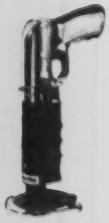

A single Ramset fastener holds 3-ton truck
Spring-like action of compressed steel surrounding the fastener creates a vise-like bond, developing amazing holding power

Ramset holding power test conducted by The Austin Co., engineers and builders, Cleveland, Ohio

offers austempered fasteners with such superior holding power

Even under the most demanding workloads, Ramset's austempered Red-Tip fasteners assure more holding power and greater fastener strength. Austempering, Ramset's high-heat slow-quench treatment, puts extra strength, toughness and dependability into every Ramset Red-Tip fastener.

Ramset's wide variety of fastener sizes puts the *right* fastener on each job—you don't have to "make-do" with off-size pins or studs. Ramset assures positive, guaranteed fastenings into tough steel, concrete or masonry faster and easier, and at lower in-place cost. Consider Ramset's many advantages and the "100-for-100" guarantee—call your Ramset dealer (under "Tools" in Yellow Pages) for details.



In addition to powder-actuated fastening, the versatile Ramset System includes Shure-Set® hammer-in tools for light fastening, and Ringblaster® heavy-duty kiln gun.

Ramset® Fastening System

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. . . Reader Comment

Better Inspection

SIR—Your editorial "Better Inspection" (ENR Mar. 26, p. 112), certainly presents opinions worth considerate review by responsible engineers.

You have chosen to judge "policing" as a reprehensible activity for an engineer to engage in. Let me quote the definition of "engineering" as contained in the registration laws as ratified by the majority of states in the union: "engineering includes professional service, such as . . . in connection with any public or private utility, structure, machine, equipment, process, work or project with which the public welfare or the safeguarding of life, health or property is concerned, when such professional service requires the application of engineering principles and data." This is the oath of office of a policeman!

A good example of a generally accepted end-result specification is the requirement for concrete to attain a minimum ultimate compressive strength at the age of 28 days. Such a specification affords the contractor the freedom to choose the cement and aggregate proportions and placement methods necessary to produce the desired result. Now does this mean that the engineer in *responsible* charge of the work intends to wait 28 days until the test cylinders are broken to establish the suitability of the work?

I should hope not! An end-result specification requires competent and constant inspection of the methods to insure the achievement of the end-result. A methods specification is a conservative and responsible means of eliminating guess work and should be an aid to a reputable contractor.

What recourse does and end-result specification have for unsatisfactory work, tear it out and replace it? Such action produces little benefit to the public which eventually pays the extra cost in actual monies or in delays in completion. End-result specifications provide for final resort action and have a very definite place in the construction industry, but they will not eliminate the need for continuous inspection, or as you express it "policing." You are suggesting saving man-hours with Superman hours.

DAVID A. HAWKES
Diamond Gardner Corporation
Stamford, Conn.

One Digit Too Many

SIR—We thank you very much for your article "Formosa Starts $800 Million Hydro Job" (ENR Mar. 26, p. 53). We wish to advise you that the multi-purposed Shihmen Dam project is approximately an $80-million hydro job instead of $800 million.

W. K. KU
Chief Engineer
Shihmen Development Commission
Formosa

(Reader Comment continued p. 16)

Your doctor of preventive maintenance with ESSO MULTI-PURPOSE GREASE H

Your maintenance man has a way of nursing all hard-working machinery that results in fewer breakdowns and less costly down-time. That's why it really pays dividends to furnish him with an outstanding lubricant like Esso Multi-Purpose Grease H to keep construction equipment sound and healthy.

Esso Multi-Purpose Grease H eliminates the need for most other types of "special purpose" greases. It gives positive protection against dust, water and dirt and it is suitable for many grease applications such as water pumps, wheel bearings, shackles, track rollers, steering linkages — and other engine and chassis components. Esso Multi-Purpose Grease H reduces handling and inventory costs, requires less dispensing equipment.

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Firestones meet schedules on the toughest projects!

Where it's rough going for every yard moved, Firestone tires turn downtime into worktime profit! That's because every Firestone off-the-highway tire is job engineered for the toughest duty. They're built with Firestone Rubber-X, the longest wearing rubber ever used in Firestone tires! Firestone S/F (Shock-Fortified) nylon or rayon bodies shrug off bruising shock and impact. Tough Firestone treads and sidewalls work through terrain that often ruins ordinary tires. Call your Firestone Dealer or Store and ask about the full line of Firestone tubeless or tubed off-the-highway tires. He'll recommend the tires that are built for your job! And remember, Firestone off-the-highway tires are backed with on-the-job service!

Rock Grip Excavator (E) Wide Base

Rock Grip Excavator (D)

When ordering new equipment always specify Firestone tires—available tubeless or tubed

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easily loads over side or end of truck. 3 types of interchangeable buckets (rock, rehandling, and general purpose) assure big payload performance in all materials, on all types of jobs.

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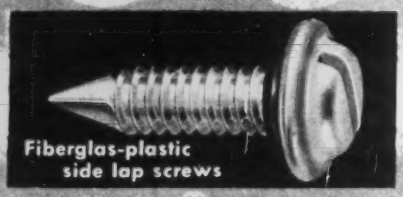
Townsend *Tuff-Tites*



A Townsend Tuff Tite specifically designed to do the job is available for any sheeting application, including curtain wall construction. Structural and side lap sheeting screws are available in a variety of materials for either crown or valley fastening, and types are available for any type of sheeting. For asbestos sheeting, both structural and side lap fasteners can be furnished for either tapping screw or bolt and clip systems. Pilot point side lap fasteners provide strong and economical joints for plastic windows and skylights.

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. . . *Reader Comment*

Reasons For Failures

SIR—I believe many of your readers look to your pages to discover the causes of engineering failures as well as to discover new methods. In one of your failure stories (ENR Mar. 5, p. 23), appears the statement, "exact cause of the failure has not yet been determined and probably will not be *officially disclosed*."

This statement (the latter part) bothers me the more I think about it. A great part of engineering's advancement has been made as a result of the study of engineering failures.

I believe it to be of prime importance for your magazine to dig into failures and disclose them and for engineers in general to speak up and demand that causes of failures be disclosed whenever the causes have been found out.

J. STANLEY JEFFERY
Jackson, Mich.

For Your Calendar . . .

Building Research Institute Conference on Building Illumination. Statler Hilton Hotel, Cleveland, Ohio, May 20-21. Write: Harold Horenstein, Technical Secretary, Building Research Institute, 2101 Constitution Avenue, Washington 25, D. C.

American Society for Quality Control, 13th Annual Convention. Cleveland Public Auditorium, Cleveland, Ohio, May 25-27. Write: Wade B. Wenzel, Registrar, Republic Steel Corp., Cleveland 1, Ohio.

Jet Airport Conference of ASCE Air Transport Division. Shamrock Hilton Hotel, Houston, Tex., May 26-27.

Design Engineering Show. Convention Hall, Philadelphia, Pa., May 25-28. Write: Clapp & Poliak, Inc., 341 Madison Ave., New York 17, N. Y.

Wire Reinforcement Institute Annual Spring Meeting. the Greenbrier, White Sulphur Springs, W. Va., May 25-26. Write: Frank H. Brown, Managing Director, WRI, 1346 National Press Building, Washington 4, D. C.

Concrete Reinforcing Steel Institute. Annual Meeting, the Greenbrier, White Sulphur Springs, W. Va., May 25-26. Write: R. C. Dehoff, Managing Director, CRSI, 38 S. Dearborn St., Room 1024, Chicago 3, Ill.

National District Heating Association, Annual Meeting. Skytop Club, Skytop, Pa., June 1-3. Write: C. E. Squires, Cities Service Co., 60 E. 42nd St., New York 17, N. Y.

Southern Research Institute Conference. Birmingham, Ala., June 11-12. Write: Southern Research Institute, 2000 9th Ave., South, Birmingham 5, Ala.

Symposium on Plastic Design in Steel. Queen's University at Kingston, Ontario, June 15-19. Write: Dr. H. W. Curran, Director of Extension, Queen's University, Kingston, Ontario.

National Society of Professional Engineers, Annual Meeting. Commodore Hotel, New York City, June 17-20. Write: C. L. Ritchie, NSPE, 2029 K St., N. W., Washington 6, D. C.

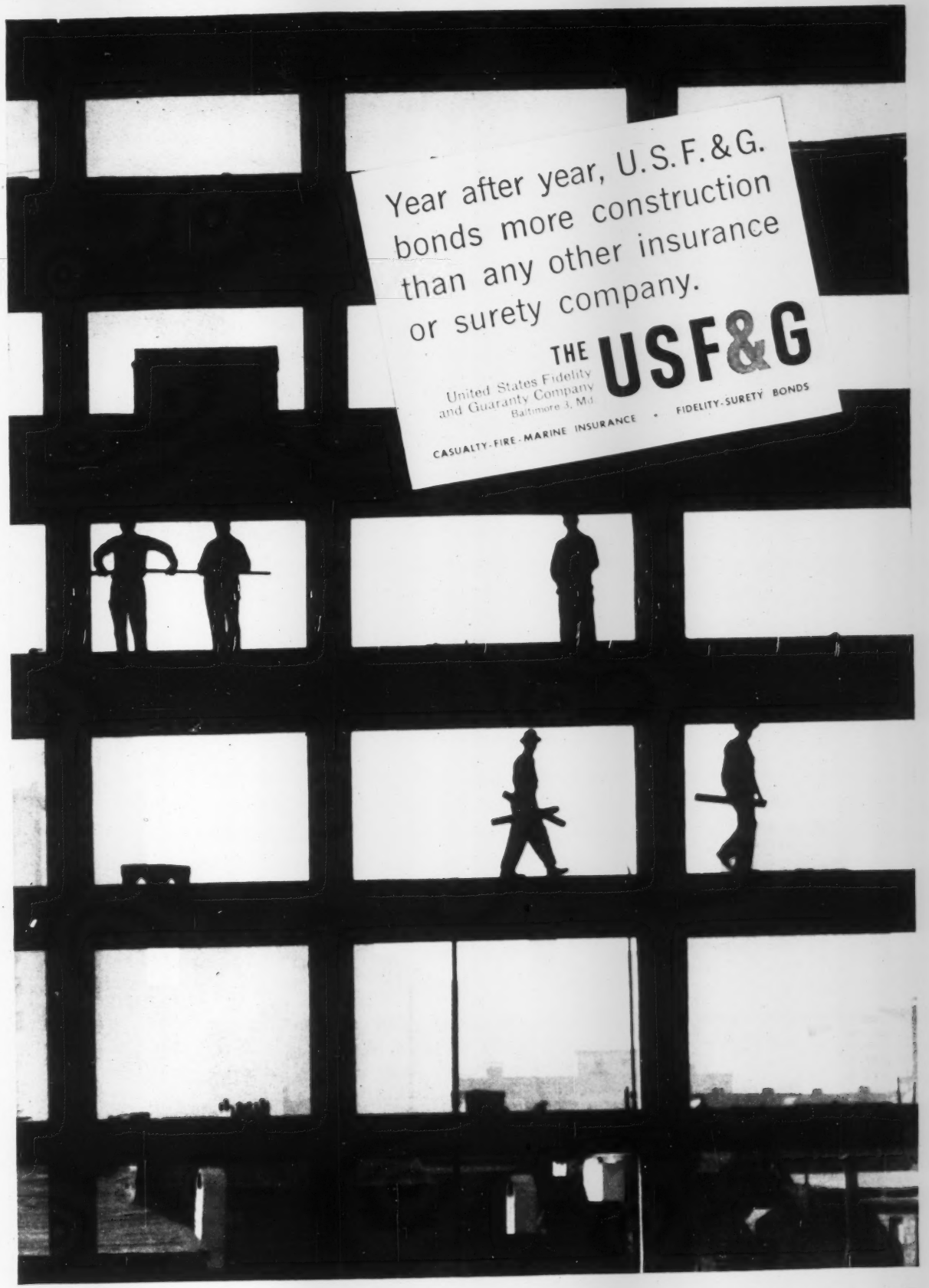
American Society for Testing Materials Annual Meeting. Chalfonte-Haddon Hall, Atlantic City, N. J., June 21-26. Write: ASTM, 1916 Race St., Philadelphia 3, Pa.

American Institute of Architects, Annual Meeting. Roosevelt Hotel, New Orleans, La., June 22-26.

Air Pollution Control Association, Annual Meeting. Hotel Statler, Los Angeles, Calif., June 22-26.

Asphalt Institute Mid-Year Meeting. Hotel del Coronado, San Diego, Calif., June 24-25.

Waste Disposal in Marine Environment, First International Conference. University of California, Berkeley, Calif., July 22-25. Write: Department of Conferences, University Extension, University of California, Berkeley 4, Calif.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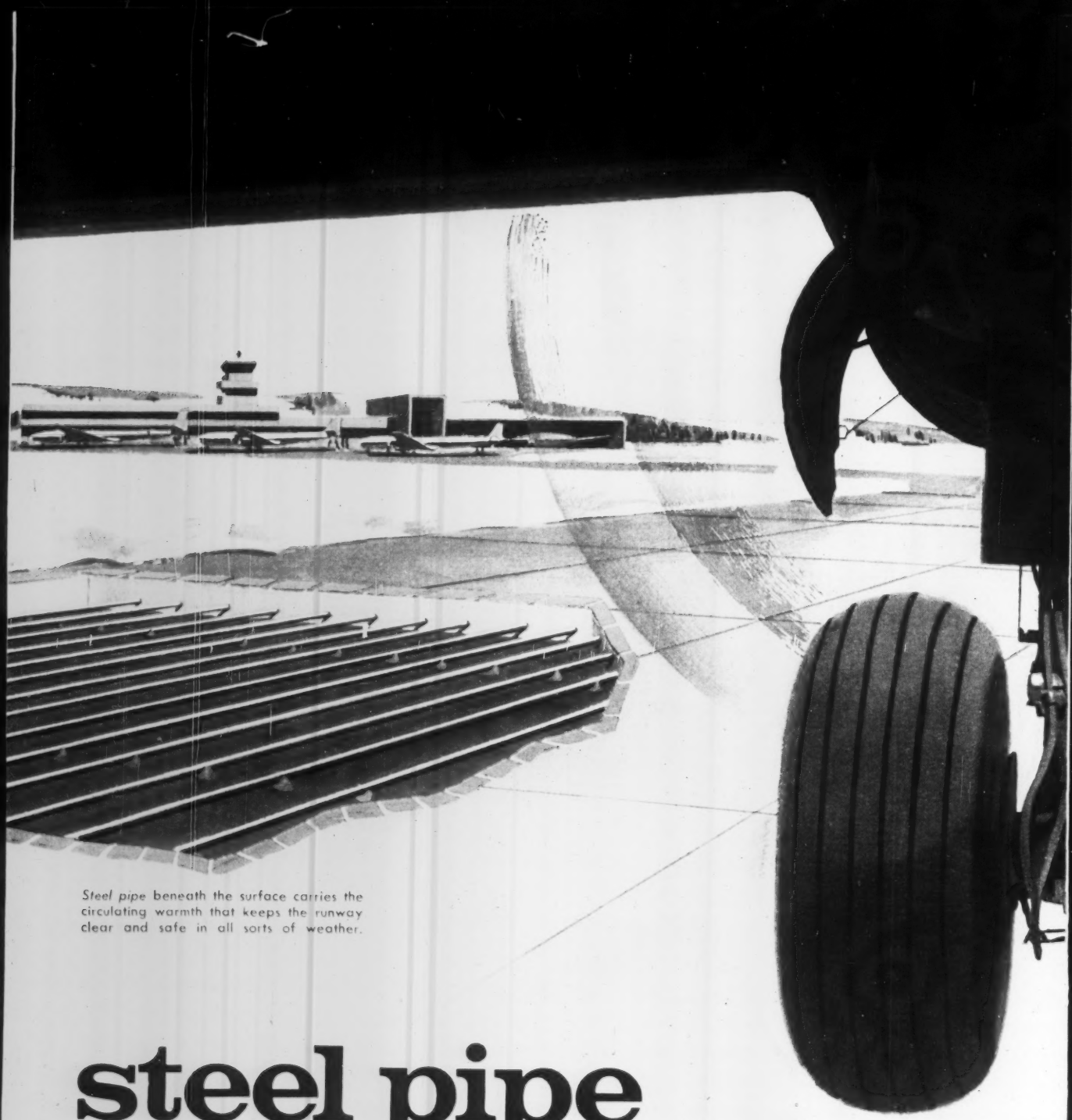
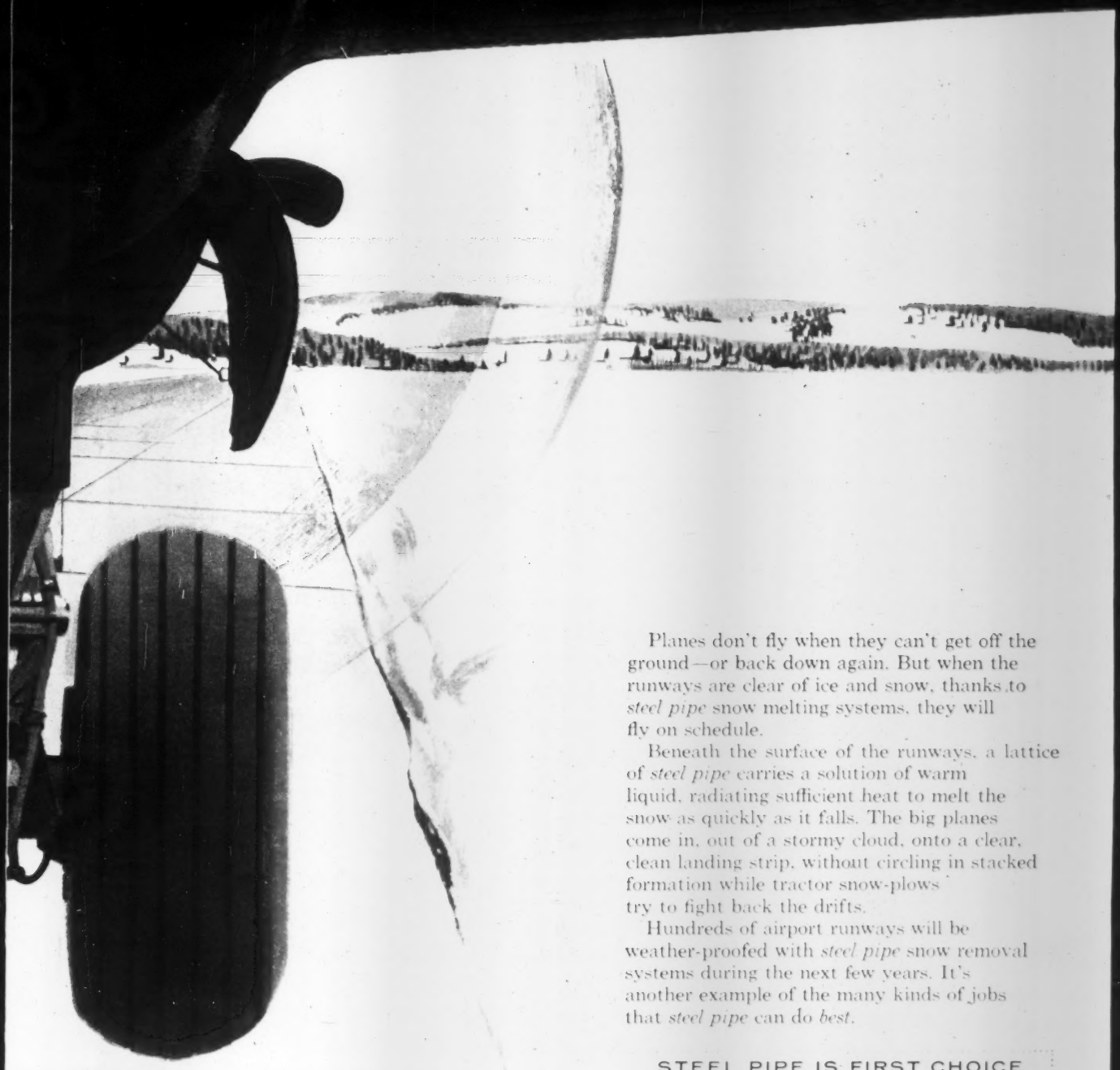


Steel pipe beneath the surface carries the circulating warmth that keeps the runway clear and safe in all sorts of weather.

steel pipe

snow melting systems

keep runways clear



Planes don't fly when they can't get off the ground—or back down again. But when the runways are clear of ice and snow, thanks to *steel pipe* snow melting systems, they will fly on schedule.

Beneath the surface of the runways, a lattice of *steel pipe* carries a solution of warm liquid, radiating sufficient heat to melt the snow as quickly as it falls. The big planes come in, out of a stormy cloud, onto a clear, clean landing strip, without circling in stacked formation while tractor snow-plows try to fight back the drifts.

Hundreds of airport runways will be weather-proofed with *steel pipe* snow removal systems during the next few years. It's another example of the many kinds of jobs that *steel pipe* can do *best*.

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- Low cost with durability
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- Weldable—easily, strongly
- Threads smoothly, cleanly
- Sound joints, welded or coupled
- Grades, finishes for all purposes
- Available everywhere from stock

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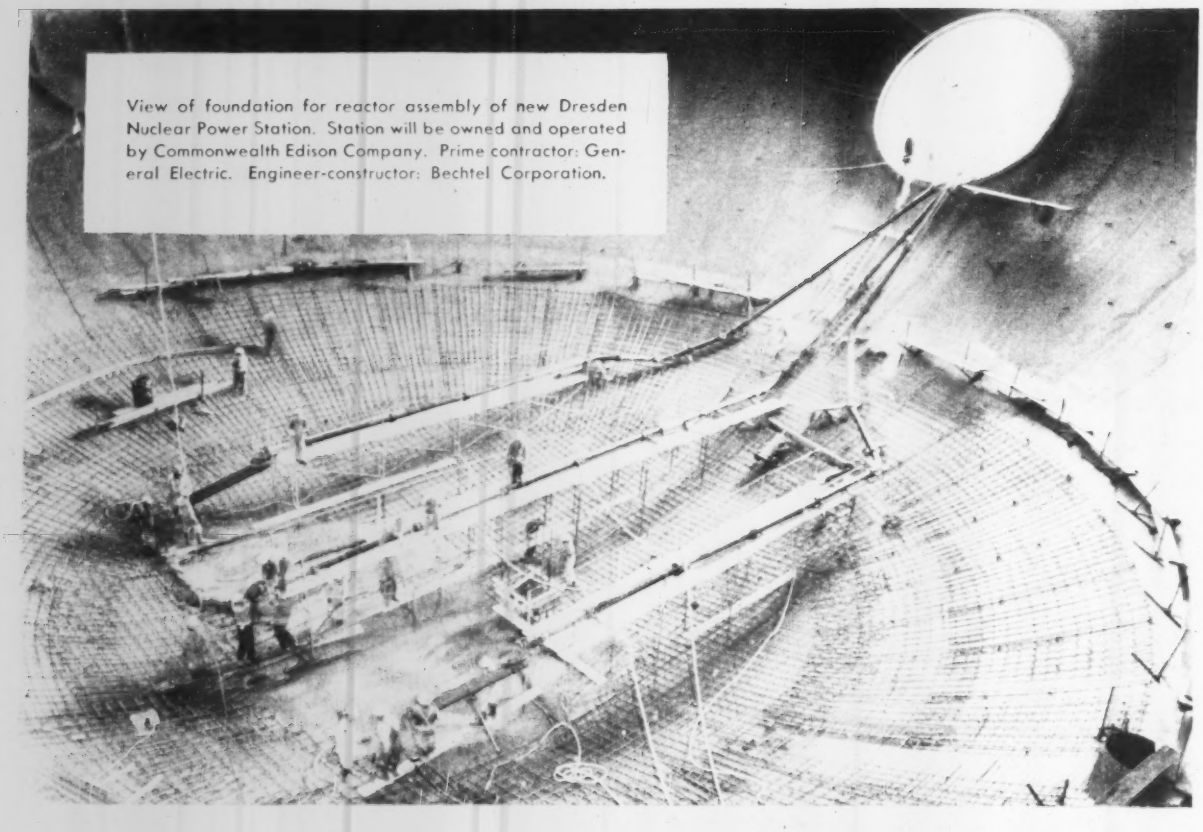

View of foundation for reactor assembly of new Dresden Nuclear Power Station. Station will be owned and operated by Commonwealth Edison Company. Prime contractor: General Electric. Engineer-constructor: Bechtel Corporation.

2850 tons of re-bars from Ryerson in nation's largest all-nuclear power station

Aerial view of Dresden Nuclear Power Station. About 75% completed, it will have a net electrical capacity of 180,000 kw.

The huge, new Dresden Nuclear Power Station, located southwest of Chicago, is the largest under construction in the country. The foundation and shielding alone for the nuclear reactor assembly contain 22,000 cu. yd. of concrete, reinforced with re-bars from Ryerson.

On major projects like this—or those that require only a few tons—rely on Ryerson. Ryerson offers unequaled stocks and fabricating capacity to keep pace with any job . . . provides setting plans . . . tags steel for positive identification . . . delivers on schedule—exactly as your job requires.

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ENGINEERING NEWS-RECORD

Vol. 162, No. 19 May 14, 1959

Number of copies printed this issue 84,787

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THE CONSTRUCTION WEEK

CUT-AND-COVER MISSILE SILOS—Instead of sinking shafts to build underground silos for the Titan ICBM, Morrisen-Knudsen will do the job with scrapers. The silos will be 167 ft high, 40 ft in diameter. M-K will scoop out bowls about 1,200 ft across and 170 ft deep, then erect the silos and backfill. Construction site is Lowry AFB, Colo.

MICROWAVES SLASH SURVEY COSTS—After surveying for a year with the Tellurometer, the U. S. Geological Survey credits the electronic equipment with cutting 52% off the cost of tape-and-transit traversing and 42% off the cost of triangulation. The agency surveyed 6,542 miles of lines on 40 projects with the equipment during the year.

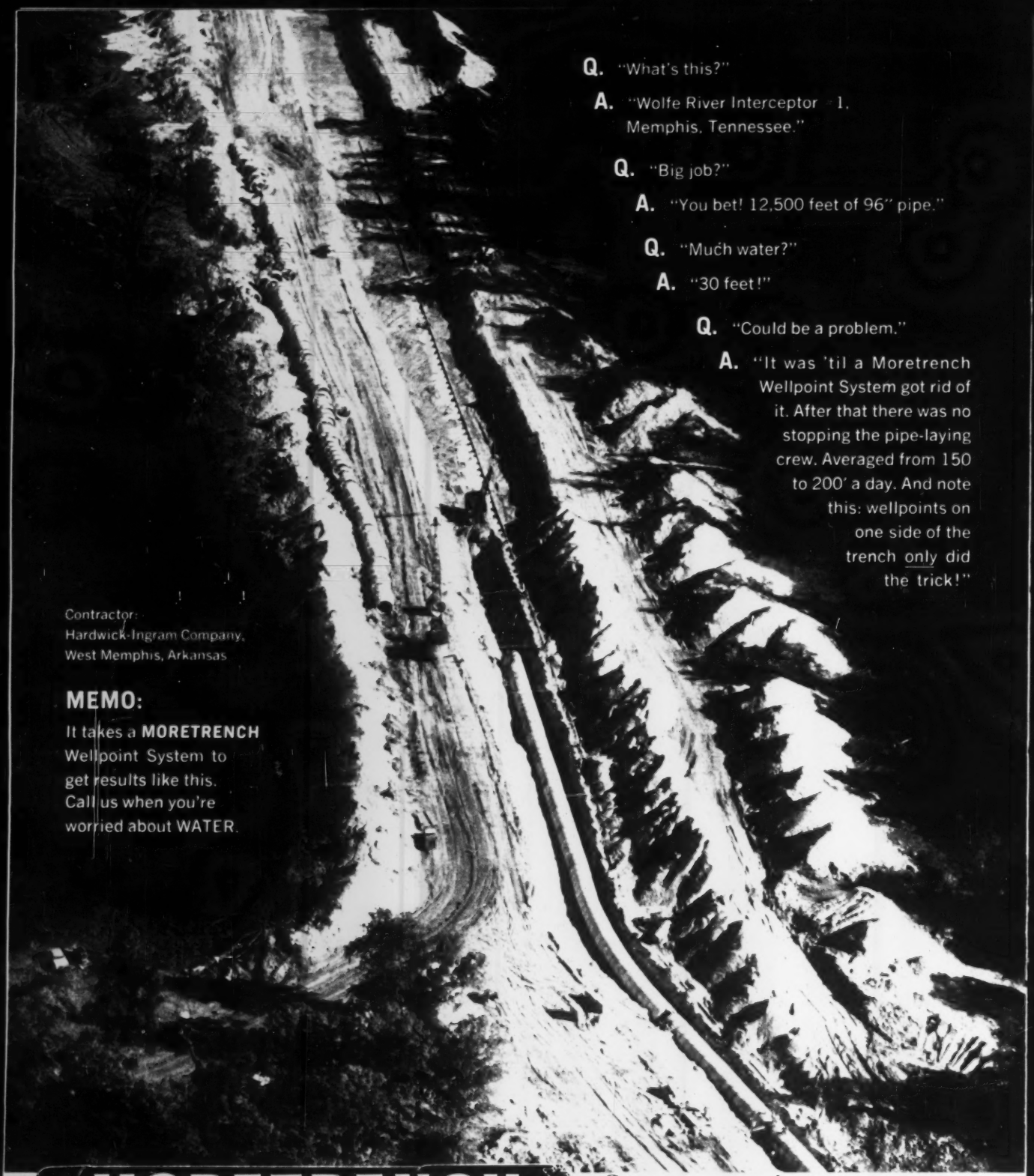
ICEMAN IN HOT WATER—Officials of Hall County (Gainesville), Ga., have charged the president of an ice company with tapping an authorized direct sprinkler connection from a main to his plant for an unauthorized 330 million gallons of water. He sold water at bargain rates to other firms, according to the indictment.

POOR GUIDANCE?—Freshman engineering enrollment has declined sharply for the first time in eight years, says Engineers Joint Council. Enrollment fell from 78,757 in 1957 to 70,029 last year. Total U. S. freshman enrollment rose 7% in that time. The drop is attributed to false appraisal of engineering opportunities by students, parents and advisers, fear of tough courses, and interest in other scientific fields.

DOUBLE CHECK—Plans for new nursing homes in New York State will now have to be approved by the State Board of Social Welfare, in addition to meeting local building codes. The new ruling applies outside of New York City—in the city, the Department of Hospitals gives plans a second check. Other states could well follow suit; loss of life in nursing home fires has been appalling throughout the U. S.

EMPLOYMENT RISES—Employment in contract construction increased by 225,000 last month. This brought the number of construction workers employed in April to 2,634,000, the Labor Department reports. Although this was 78,000 less than in April 1957, it was 141,000 more than a year ago. Total unemployment dropped by 735,000, to 3.6 million.

P.S. ON THE SENATE—That new Senate Office Building is having more trouble. Now they're going to trim a half-inch off the bottoms of some 600 doors. Reason: So the doors will clear the new carpeting that must be put down over the slippery, rubber tile floors (ENR May 7, p. 24). Most of the doors are walnut, 2¼ in. thick; some are metal.



Q. "What's this?"

A. "Wolfe River Interceptor 1, Memphis, Tennessee."

Q. "Big job?"

A. "You bet! 12,500 feet of 96" pipe."

Q. "Much water?"

A. "30 feet!"

Q. "Could be a problem."

A. "It was 'til a Moretrench Wellpoint System got rid of it. After that there was no stopping the pipe-laying crew. Averaged from 150 to 200' a day. And note this: wellpoints on one side of the trench only did the trick!"

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WASHINGTON OBSERVER

- **FHA still has cash in the kitty**
- **Housing bottleneck will open next week**
- **GSA gets money for office buildings**
- **Ellis Island bid turned down again**

● **FHA isn't yet running out of authority to insure home mortgages—despite the long delay in getting omnibus housing legislation out of Congress.** Latest figures indicate FHA's insurance authority kitty still stands around $1.2 billion to $1.4 billion—about where it was at the beginning of March. This is enough to finance, say, 100,000 homes—even if the loan authority weren't increased each month by expiration of commitments and agreements, and by mortgage payoffs.

Hence, Congressional leaders so far haven't been under sharp pressure from homebuilders unable to get FHA insurance. Instead, the real pressure for action stems from the fact that Congress sees the first of June just around the corner, and figures it's time to start sending some of the big "must" legislation to the White House.

—

● **House leaders say they'll force the $2.1-billion housing bill out of the Rules Committee by next week, one way or another.**

Here's what's involved in the House package:

Increasing the GI interest rate to 5¼% from present 4¾%.

Increasing FHA mortgage insurance authority by $6 billion.

College housing loan fund boosted by $400 million.

Urban renewal grants of $1.5 billion for three-year period.

Housing for the elderly would get $100-million loan fund.

Public housing authorization calls for 140,000 units over a four-year period.

So far, the delay in enacting all this hasn't made any serious inroads on housing activity. Latest official estimate from FHA chief Norman Mason is for 1,285,000 starts this year. That's about as close as you can get to other educated guesses, which have been running around 1,300,000 this year. Last year there were 1,200,000 actual starts of private and public homes.

—

● **Extra money to keep construction of federal office buildings on schedule has been voted** to General Services Administration by the House Appropriations Committee.

An additional $25 million was approved, chiefly to buy land and to produce plans for the $600-million program. The Administration had not asked for any funds for this purpose next year. It wants to slow the program down.

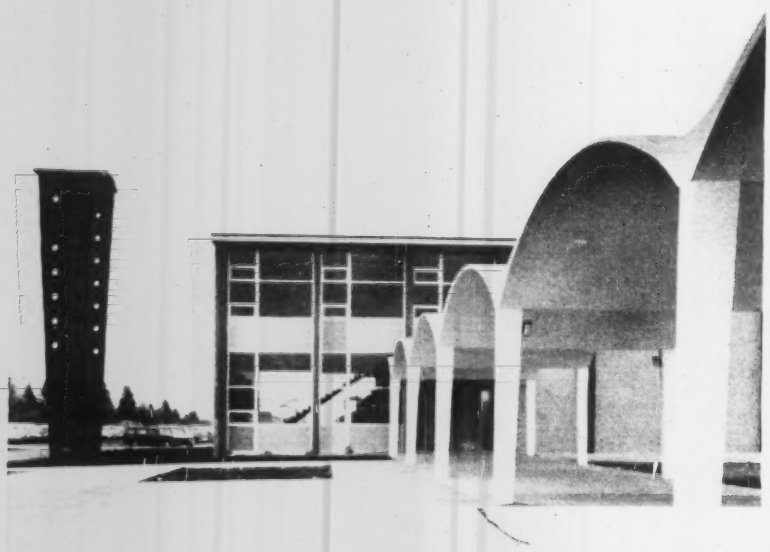
—

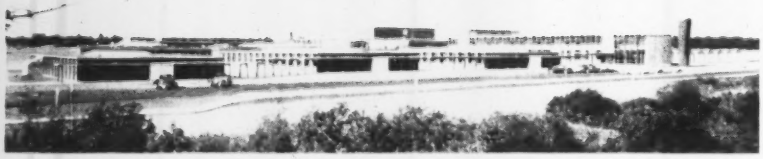
● **The government now will try to sell Ellis Island by negotiation.** Two efforts to get a reasonable offer through bidding have failed—the General Services Administration last Friday turned down all bids again. The highest, $671,000, falls far short of what GSA wants out of property it says has an investment value of more than $6 million (ENR Apr. 16, p. 173).

GSA Administrator Franklin G. Floete now will try negotiation with public or private groups.

TACOMA Rings the Bell!

New High School of Precast and Prestressed Concrete Scores in Firesafety, Beauty and Economy





● "As close to perfection as one could desire for student evacuation and for reducing the spread of fire." That's how the head of Tacoma's Fire Prevention Bureau described this new, all-concrete Woodrow Wilson High School. He added that this type of construction is recommended by the National Fire Protection Association for reducing life and property loss.

A product of 100% local resources, the school's 12 buildings and covered walkways put more than five acres under concrete roofs. Yet its final contract cost of $2,833,403 was only $14.06 per square foot, including such "extras" as sidewalks, paved parking areas, concrete tunnels for utilities, landscaping, architects' fees, and a year-round Olympic-size swimming pool!

Detailed cost comparisons, including savings on insurance premium costs, led to concrete construction. Among the 491 prestressed concrete girders were 105-foot spans over the gymnasium—the largest prestressed beams in the Pacific Northwest. All columns, tilt-up wall panels, walkway frames, and some 6,000 channel roof slabs were precast at the job site. 'Incor' was used exclusively in all prestressed members, and Lone Star Portland in all other concrete work.

Yes, Tacoma has rung the bell with this prefabricated concrete school. For whom does the bell toll? School authorities across the nation, faced with demands for safer schools and greater economy—may well heed the ringing!

WOODROW WILSON HIGH SCHOOL
Tacoma, Washington

Architect:
LEA, PEARSON & RICHARDS

Structural Engineering:
ANDERSON, BIRKELAND & ANDERSON

General Contractor:
NELSON CONSTRUCTION COMPANY

Prestressed Concrete:
CONCRETE TECHNOLOGY CORP.

Subcontractor, Concrete:
GEORGE MADSEN CONSTRUCTION CO.

Ready Mix Concrete:
HOLROYD COMPANY

All of Tacoma

LONE STAR CEMENTS COVER THE ENTIRE CONSTRUCTION FIELD

LONE STAR CEMENT CORPORATION

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LONE STAR CEMENT, WITH ITS SUBSIDIARIES, IS ONE OF THE WORLD'S LARGEST CEMENT PRODUCERS. 21 MODERN MILLS. 43,100,000 BARRELS ANNUAL CAPACITY

The Interstate Issue Is Joined

- **House Public Works Committee meets to discuss authorizations—but hearings are dominated by crisis in Highway Trust Fund.**
- **Authorization bill is wrapped up, but funding solution still hangs.**

Action finally has started to bridge the $5-billion gap developing in Interstate Highway System financing.

The House Public Works Committee took testimony last week on an authorization bill that would clear the deck for possible financing measures to come later from the tax-writing Ways and Means Committee.

But the impending crisis in Interstate financing dominated the sessions from beginning to end. Here's what shaped up at the three days of hearings:

• **The problem.** Unless the Highway Trust Fund is bolstered at this session of Congress, the states will get no Interstate allocations for fiscal 1961 this summer. They will get only $500 million next year. It will take $2.5 billion each year to prevent a construction slowdown.

• **Administration's solution.** Pay-as-you-go, either through increased motor fuel tax or other taxes, was strongly backed by the Administration's spokesman, John J. Allen, Jr., Commerce Undersecretary for Transportation.

A 1½ cent per gallon increase in motor fuel tax would supply the needed money. This was shown by facts, figures and charts presented by Bertram D. Tallamy, Federal Highway Administrator.

• **Democrats' solution.** The necessary money could be provided by shifting automotive excise taxes from the General Fund into the Highway Trust Fund. Or temporary deficit financing would do until a long-range highway tax program can be worked out two years from now.

• **Agreement.** There was no divergence of opinion over the dire consequences of doing nothing this year to bolster the program.

• **The outcome.** Democrats and Republicans on the Public Works Committee indicated by their questions and statements that they have come to no decision over where the money is to come from to plug the gap.

Committee members of both parties did agree that Congress would pass the authorization bill introduced by Rep. George H. Fallon (D., Md.), chairman of the subcommittee on roads.

Congressman Fallon's measure aims to tidy up a couple of matters left dangling by Congress last year.

The 1958 Highway Act authorized allocation of Interstate funds for fiscal 1960 and 1961 on the basis of the 1958 estimate of cost to complete the system. The 1958 act also increased the Interstate allocations for each of the two years from $2.2 billion to $2.5 billion, in line with the new 1958 cost estimate. Representative Fallon's bill would now do as much for fiscal 1962, which was left out of last year's act to placate some Congressional critics.

This action is an essential prologue to drafting of a highway financing bill by the Ways and Means Committee.

Last week's hearings emphasized repeatedly that Congress will take a whole new look at highway financing two years from now. That's when two U. S. Bureau of Public Roads reports will be in. One deals with highway cost allocations and benefits, the other with a revised estimate of the cost to complete the Interstate system.

This means that an interim financing plan would suffice to take care of allocations for fiscal 1961 and 1962. Which plan to use will be examined when the Ways and Means Committee meets. Here are some they will be considering:

• **Waive the pay-as-you-go requirement** for the Highway Trust Fund. Congress did this a year ago for allocations made last summer. This approach would almost surely run into a White House veto since it would require borrowing from the General Fund of the Treasury. It is therefore given little chance of adoption.

• **Increase the motor fuel tax or other taxes** to cover all future disbursements under the allocations that would go out this year and next. This is President Eisenhower's proposal and he reiterated it at his press conference last week. Democratic leaders and Congressmen generally have already turned down the President's proposed 1¼ cent per gallon increase in the federal gas tax. The states are solidly opposed to this further federal intrusion into their principal source of highway revenues.

• **Transfer some automotive excise taxes to the Highway Fund,** using some taxes that are due to expire June 30 and adding to them as needed. Here again, the Administration would oppose. President Eisenhower's budget counts on re-enactment of these expiring taxes, with the revenues to go into the General Fund as before. He insists that Congress divert none of the tax receipts that he has budgeted for the General Fund.

• **Issue highway bonds** to tide the Trust Fund over the interim period (ENR Apr. 23, p. 98). The bonds would be retired out of receipts from taxes to be enacted in a later year, probably 1961.

One of these devices, or a combination, will be approved at this session, since Congress has made it clear that it has no intention of slowing down the Interstate program. The cost of a slowdown would be too great, as last week's witnesses pointed out.

• **The effects of slowdown.** In his testimony, Mr. Tallamy charted a fast drop-off for highway construction if Congress should fail to act this year.

Federal spending for roads would hit a sharp peak of $3 billion in fiscal 1960, starting July 1, and then would fall off steeply to $1.67 billion three years later. This decline would be a complete reversal of the rapid rise that has occurred since the big federal-aid program got under way in 1957, when federal expenditures amounted to $1 billion.

Speaking for the American Association of State Highway Officials, President Ralph R. Bartelsmeyer of Illinois summarized the disaster that would

overtake the highway departments. By July of next year, he said, some 37 states will have had to stop awarding Interstate contracts because they will have used up all their federal allocations.

Already, one state has stopped contract awards for Interstate work. This state, Ohio, is in a financial bind because it has already made Interstate awards in anticipation of the allocation due this summer. The law specifically empowers the states to do this, in order to speed Interstate construction. But Ohio will have to carry the federal share of $33 million in these projects if its full allocation does not come through.

In another two months, four additional states—California, Connecticut, New York and Vermont—will reach the end of their Interstate allotments, compelling a shutoff of Interstate contracts. And by December 31, 17 more states will have run into the same dead end for Interstate work. Six months later, the list will have swelled to 37.

• **Layoffs threaten.** Breakup of state highway organizations is another destructive effect that Mr. Bartelsmeyer predicted on the basis of AASHO surveys. If the scheduled Interstate allocation cannot be made this year, some 32 states face the necessity of discharging the engineering and technical personnel that they have recruited and trained for the enlarged work load. Only two states, in fact, have the resources to keep these employees on the payroll until the Interstate program would get going again.

A two-year interruption of Interstate allocations would cause at least a three-year delay in completion of the system, the witnesses agreed. It would take the state highway departments a year to get back on schedule, AASHO reported. And construction would take at least as long to regain the lost momentum.

Meanwhile the nation and the industry would be paying a heavy cost, Maj. Gen. Louis W. Prentiss, executive vice president of the American Road Builders Association, told the committee. An Interstate stoppage, he said, would increase unemployment, cause a lowering of gross national output and diminish tax receipts. At the same time, it would heavily penalize construction contractors, consulting engineers, and the manufacturers and distributors of materials and equipment. These private industrial groups, General Prentiss pointed out, have geared up to build the big program, and a shutdown would idle much of their equipment and many of their employees.

On the basis of safety alone, he added, the fully operative system will save an estimated $1.4 billion.

Friel Challenges Civils

- **Lagging also are contributions from ASCE members for the proposed United Engineering Center.**
- **Cleveland, ASCE convention's host city, is also a major topic of engineering discussion.**

Lagging research in the civil engineering field—compared with other branches of engineering received special attention at the national convention of the American Society of Civil Engineers in Cleveland last week.

This charge, coupled with an announced plan to finish this summer the drive for $800,000 in contributions from members for the new United Engineering Center headquarters in New York, gave a distinct air of challenge to the convention, which was attended by about 800 persons.

• **Research emphasized.** In his presidential address to the convention, Francis S. Friel posed a number of challenges facing ASCE and the civil engineering profession. He put particular emphasis on research.

"We are not making our full and proper contribution to the advancement of engineering and scientific knowledge," said Mr. Friel.

We can correct this situation in several ways, he said, by:

- Providing greater incentive to research with awards like the $5,000 ASCE Research Fellowship established last year.
- Providing improved facilities for conducting research in colleges and industrial laboratories.
- Urging more emphasis on the sciences in engineering education.
- Supporting those institutions of higher learning in which research should be conducted.
- Making provisions in industry and in our own firms for research work.

"It is time for us, as members of ASCE, to consider our responsibilities in relation to recent developments in science and engineering," declared Mr. Friel. "Our performance in research in these fields is inadequate on two points. We are not doing enough basic research, and we are not utilizing sufficiently the knowledge we have."

President Friel also called his listeners to task for not taking a more active leadership in public and private construction even to protesting unnecessary and uneconomical construction. "I dare to take this lead . . . as well as the research question and others," he said, "is the equivalent of poor, and in some cases, unethical practice."

The ASCE Research Fellowship—awarded for the first time this year—will go to Robert W. Gerstner, instructor in civil engineering at Northwestern University.

• **Fund drive approaches deadline.** ASCE's quota of the $10 million required to build a new 18-story United Engineering Center in New York is $800,000. To date $500,000 has been contributed, the remaining $300,000 must come in before October 15, when construction is scheduled to start.

Only 7,000 of the Society's 42,000 members have yet contributed to the UEC campaign. Contributions have so far ranged from about $30 to a high of over $5,000 with an average of about $65.

• **Highway activity.** In a progress report on the national highway program, Ellis L. Armstrong, Commissioner of Public Roads, predicted that nearly 6,000 highway contractors will be engaged on roadbuilding this summer on the federal-aid highway systems—the Interstate and ABC (primary, secondary and urban) roads.

The contractors will be using at least 350,000 pieces of major equipment and will be moving 20 million cu yd of earth and rock per day.

Work is now under way on 20,000 construction contracts involving 32,000 miles of roadway and 10,500 bridges, at a total cost of $7.2 billion, Mr. Armstrong said.

By the end of July, when construction hits a seasonal peak, about $8.1 billion worth of construction will be in progress on the federal-aid systems. This will represent an increase of $2 billion over the amount of work under way at the same time last year.

In general, the Interstate as well as the ABC program are on schedule, said Mr. Armstrong, but the Interstate program faces a serious and costly slowdown if adequate funds are not provided for fiscal years 1961-62 (see p. 25).

Mr. Armstrong cited many roadbuilding operations that have been

With Lag in Research Projects

speeded up, improved and simplified. Here are a few:

Better highway planning is being performed in urban areas. New advances in aerial surveying, electronic distance-measuring apparatus, and new geophysical techniques for subsurface explorations are proving valuable aids to the highway engineer.

Electronic high-speed computers are being used to considerable advantage by 45 state highway departments in bridge and highway design and in complex and extensive analysis of origin and destination traffic survey data. More careful attention is being given to geometric standards of highways.

The latest trend in modern highway design and construction of divided highways is to treat them as separate roadways, each independently fitted into the topography to the best advantage, with full consideration for safety, headlight glare and aesthetic values.

Roadbeds are being built at minimum cost and with improved stability, due to advancement in knowledge of soils and soil behavior, said Mr. Armstrong, while improved and more durable highway pavements are being made possible through better knowledge of aggregates, portland cement and bituminous materials. At the same time, there is a growing realization among highway engineers that research must be stepped up in both highway design and construction. The largest such research project under way is the $22-million AASHO-sponsored road test at Ottawa, Ill.

• Cleveland's problems Cleveland had not hosted an ASCE national meeting for nearly 30 years, so some of the city's public works plans were highlighted at this meeting.

Immediate action to extend the use of Lake Erie water is urgent if curtailment of industrial growth in the eight county area surrounding Cleveland and Akron is to be avoided. This significant conclusion is the result of a recent water study of that area, said Frank W. Edwards of the Stanley Engineering Co., Chicago.

Other results of the study indicate that 13 reservoirs could be constructed to yield 100 mgd of inland surface water; also that 15 mgd of groundwater supply could be developed in the 60x30-mile area. But costs of such development of future water sources will increase faster than the costs of pipelines from Lake Erie, said Mr. Edwards.

Water consumption in the Cleveland area is expected to increase from last year's maximum hour rate of 600 mgd to 655 mgd in 1970 and to 850 mgd by the year 2000, according to J. W. Avery, of Havens and Emerson, Cleveland.

This increased demand will require large feeder mains, additional pumping stations and treatment stations, and increased storage facilities. Construction of some of these facilities should be started in the near future, he said.

A unified agency to acquire, construct and maintain adequate sanitary and storm sewer systems in Cleveland and surrounding Cuyahoga County would answer the sanitation challenge in that area, according to Alfred A. Estrada, of Albright & Friel, Inc., Philadelphia.

Formation of such an agency would protect Cleveland's water system from the ever increasing discharge of overflowing cesspools and inadequately treated sewage.

Opening of the St. Lawrence Seaway focuses considerable attention on Cleveland's potential as a shipping port for overseas cargo. Reports on deep-draft navigation developments on the Great Lakes, and overseas waterborne traffic potentials were received with considerable interest at a session of ASCE's Waterways and Harbors Division.

Walter E. McDonald, of the North Central Division, Corps of Engineers, Chicago, said that 23-ft minimum depths, both upbound and downbound, will be provided cargo vessels for the 1960 shipping season in all Great Lakes connecting channels except the St. Mary's River.

Depending upon funds appropriated by Congress, a minimum depth of 27 ft in both upbound and downbound channels between all of the lakes is expected to be available by June 30, 1962.

Twelve midwestern states are included in the "sphere of influence" in the foreign trade potentials of the Great Lakes ports and the St. Lawrence Seaway. (New York and Pennsylvania are not included since their eastern portions are closely aligned with Atlantic Coast ports.)

Some idea of the overseas shipping of this 12-state area, according to Wilfred G. McLennan, of the Corps of Engineers, Chicago, can be gained from the fact that it accounts for 37% of the dollar value of various manufacturing, and 42% of the dollar value of agriculture in the United States. The region represents 25% of the land area and 30% of the country's population.

The study of potential overseas traffic of the Great Lakes via the St. Lawrence Seaway is being undertaken by the Corps of Engineers.

• Honorary members named Five prominent civil engineers have been named honorary members of ASCE. They are: Julian Hinds, retired general manager and chief engineer of the Metropolitan Water District of Southern California; Maj. Gen. Glen E. Edgerton, USA (Ret.), former governor of the Panama Canal; Frank M. Masters, of Modjeski and Masters, consulting engineers, Harrisburg, Pa.; Gustav J. Requardt of Whitman, Requardt and Associates, Baltimore; and Herbert A. R. Austin, consulting engineer, Honolulu.

ASCE Nominates Marston for President

Frank Alwyn Marston, partner in Metcalf & Eddy, became the official nominee for the presidency of the American Society of Civil Engineers for 1959-60 at its meeting in Cleveland.

Election will be by mail ballot of the membership with the new president to take office at the annual meeting of the society in Washington, D. C., during the third week in October.

Mr. Marston has been with the famed Boston firm of sanitary engineering consultants for over 50 years and has been a partner since 1920.

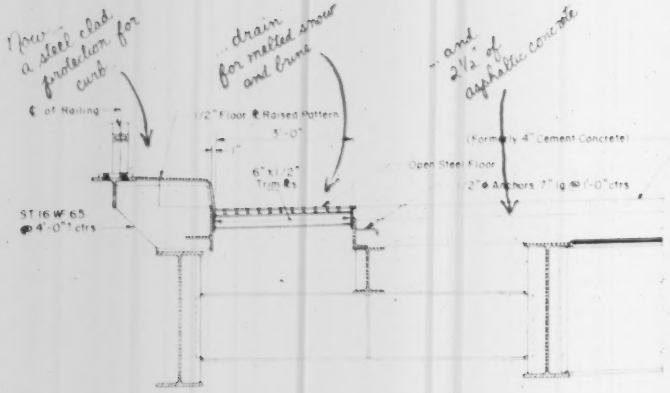
He is a past director of ASCE and was a vice president from Zone I for the two years 1952-54. He is a past president of the Boston Society of Civil Engineers.

Born in Worcester, Mass., 73 years ago, Mr. Marston is a 1907 graduate of Worcester Polytechnic Institute.

New York State Changes Bridge

Edward M. Young
Associate Editor

Asphalt replaces damaged concrete on Thruway bridge.


Pour a steel clad protection for curb
℄ of Railing
drain for melted snow and brine
1/2" Floor ℄ Raised Pattern
3'-0"
6"x1/2" Trim ℄s
ST 16 W 65 @ 4'-0" ctrs
- and 2½ of asphaltic concrete
(Formerly 4" Cement Concrete)
Open Steel Floor
1/2" ø Anchors 7" lg @ 8'-0" ctrs

Here are the new design features (red) for New York's bridges.

In response to a "suggestion" by Federal Highway Administrator Bertram D. Tallamy, New York State's Department of Public Works is scrapping a 30-to-40-year-old bridge design that calls for a separate 4-in.-thick wearing course of blended cement concrete.

In the future, all bridges designed by the DPW will have a 2½-in.-thick bituminous wearing course unless the road surface is cast integrally with the deck.

Mr. Tallamy's suggestion stems from the failure of the wearing courses of more than 200 bridges on the New York State Thruway after two years of service.

Condition of the Thruway bridges came to light late last year in a series of exchanges between administrative and engineering personnel of the Thruway Authority and those of the DPW (ENR Aug. 21, 1958, p. 26).

Authority personnel pointed out that Thruway bridges were designed to DPW specifications and had been constructed under DPW supervision.

DPW representatives countered that the "hurry-up" program required of them by Thruway administrators made construction supervision difficult.

DPW men are also quick to add that even if all the Thruway bridges were perfectly constructed, their wearing courses still would have deteriorated under the chemical reaction resulting from the Thruway's direct and heavy salting practices during winter.

Under normal circumstances, the DPW does not apply salt or calcium chloride directly to road surfaces. It first mixes the chemical with sand in the approximate ratio of 300 lb of chemical to 5 cu yd of sand. (This ratio varies slightly depending on the section of the state.)

The Thruway, on the other hand, finds direct salting and to-the-pavement plowing essential, since its cash customers demand that the road be safe and fast at all times. These practices are held to contribute to the deterioration of the bridge pavements particularly because railings and curbs prevent the brine from running off.

Thruway engineers, while admitting the deleterious effect of the salting, say that since it is necessary, some provision should have been made for it in the design. Conversely, DPW cites the destruction of the bridge pavements as justification for the separate wearing course. Had the wearing courses been cast monolithically with

Design

the structural slabs, DPW claims, there would now be a complete rebuilding of entire roadways rather than merely a replacement of wearing courses.

The Thruway has its own answer to the problem. Late last year it began using bitumen to replace and repair the damaged cement concrete of existing bridges. It also announced that all Thruway bridges yet to be built would have bituminous wearing courses, as would all bridges under construction, where possible.

At that time, DPW representatives made no comment on the possibility that the department would change its specification.

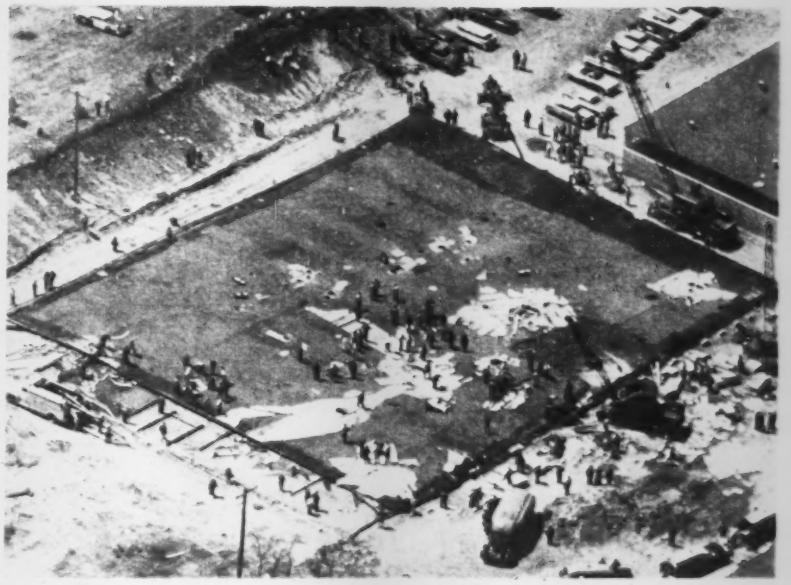
Now except in isolated cases where design considerations require that the wearing course be cast monolithically with the structural slab, the wearing courses will be bituminous.

Both J. Burch McMorran, Superintendent of New York State Department of Public Works, and Carroll Blanchard, deputy chief engineer of structures for the state, admit that the change is the result of discussions with Mr. Tallamy, who headed the Thruway Authority at the time of its construction.

Asked about the possible effectiveness of the new design in solving bridge problems, both Mr. McMorran and Mr. Blanchard replied that they would "wait and see" before commenting. Other DPW engineers, however, did comment. They say that in the last 30 years they have had little trouble with their bridge wearing courses.

Present DPW personnel cannot remember when New York became the only state in the union to place a separate concrete cement wearing course on all of its bridges. It is certain that the practice antedates the middle 1920s. Originally the structural slabs of the bridges were given a brush coat of tar before the wearing course was applied. About 1934 a membrane method of waterproofing was adopted, but this was abandoned in the mid 1940s when it was found that the membranes could not be made to lay flat and, in fact, provided a cushion effect beneath the wearing course. For the last decade, waterproofing has been accomplished by means of silicones.

About four years ago the DPW began designing some of its bridges with a 3-ft-wide open gratings adjacent to the curbs to permit a run-off of salt residues. These gratings are now standard in design practice wherever conditions make them feasible. In addition, many bridge curbs will be clad in steel protection plates.



FALLEN ROOF ended up at ground level, almost intact, trapping workmen underneath. Steel columns (left) indicate direction in which building toppled.

Factory Frame Flops

The entire structural steel frame of a 25,000-sq ft, one-story industrial building under construction at Westbury, N. Y., suddenly gave way last week killing one man and injuring at least four others.

The roof had been completed but work had not started on the walls.

The failure appears to be due to inadequate bracing against sideway. But what triggered the collapse is not yet known. (Wind at the time is reported to have been negligible.) Several investigations into possible causes are under way, including the possibility that a truck mixer struck the frame.

The building was being constructed for the Sem Co., Westbury, N. Y., in Westbury Industrial Park. It was 175x 143 ft in plan, about 15 ft high.

Structural design was the same as that for 25 other buildings in the park and met the town code.

Columns—6 in. wide-flange sections—were spaced alternately 25 ft and 33 ft apart in one direction and about 25 ft apart in the other. They had plates welded to them at top and bottom. Each base plate was anchored to the foundations with two bolts about ¾ in. in diameter. The top plate was bolted to the bottom flange of a steel girder that spanned the 25 and 33 ft between columns. Knee braces were inserted between girders and columns.

The girders were continuous across the top of the columns and were spliced a few feet away from the supports. Similarly, steel beams spaced about 8 ft c-c spanned the 25 ft between girders. Seated on the top flange of the girders, to which they were attached with bolts about ¾ in. in diameter, the beams were continuous over their supports. Bolted splices were located in each span about 3 ft from the girders.

There appeared to be no permanent bracing in the direction in which the beams spanned. Cables had been used to brace the frame during erection and may still have been in place at the time of the collapse.

The beams carried a 2-in. gypsum roof with built-up roofing on top. The gypsum deck had been cast on plasterboard forms supported on steel bulb tees. The forms had been left in place.

The frame fell parallel to the beams. Outer columns were ripped from their anchorages. Either nuts were pulled off the anchor bolts or the welds connecting base plate to column failed. Girder webs buckled as the frame leaned over. At the same time, beam-to-girder bolts gave way, permitting the beams to move laterally along the girders' top flanges.

The roof, almost intact, ended up at ground level, trapping workmen inside. Rescue operations started immediately. The roof was ripped apart swiftly to bring the men out.

Charles E. Catalano, engineer, of Elmont, N. Y., designed the structure but was not responsible for construction supervision. Jamco Construction Co., Westbury, N. Y., was general contractor. Kurtz Iron Works, Mineola, N. Y., fabricated and erected the steel frame.

SENDER—Details of foundation work are tape-recorded at Western Electric Co.

RECEIVER—Passer-by hears description of construction work by phone.

Phones Brief Sidewalk Supers

The sidewalk superintendent watching the foundation work for a 31-story office building in downtown New York City doesn't have to rely on the ignorance of the man standing next to him to find out what's going on below.

He has only to pick up one of 45 handy telephones to get a brief, but clear, recorded explanation of what the construction crew is doing.

Western Electric Co., which will occupy the $20-million building next year, has installed a bank of telephones below three safety glass windows built into the wall that surrounds the site.

When the interested passer-by picks up a telephone (powder blue, twilight gray or cherry pink) he hears an attractive feminine voice describe in basic terms what is going on down below.

The owner of the voice gets the information from Jesse Ault, construction superintendent for George A. Fuller Co., general contractors for the job.

Then the information on the latest phase of construction is written in non-technical language and recorded.

On the second day the telephones were in service some 2,500 persons used them to listen to the 45-second explanation of the work in progress.

This bit of showmanship is appropriate to the site. Phineas J. Barnum had his famous museum on the same spot from 1842 until it was destroyed by fire in 1865.

The contractor's crew likes the wired-for-sound observation post because it keeps curious passers-by away from driveways used by trucks.

DEW Line Reaches the Aleutians

The latest heavy construction on the Aleutian Islands is a new Distant Early Warning Line extending 1,000 miles southwest from Alaska along the chain of islands.

A series of powerful radar installations, such as this one at Umnak, will be able to detect any long-range unfriendly bombers trying to make an end run into U.S. territory.

Manned by the Air Force, the DEW Line extends from Greenland to the Aleutians. Most of the line is on the Arctic Circle.

Steel Stocks Up

But warehouses' structural items would go in 60 days

Warehouses would be short certain structural steel items within 60 days from the start of a strike in the steel industry. However, the current supply of warehouse structural inventories is equal to 5½ months' supply under normal conditions, according to an officer of the American Steel Warehouse Association.

The warehouses currently have larger supplies of structural shapes on hand than at the same time prior to the 1956 steel strike, says Robert Welch, executive secretary of the association. Reporting at a meeting of the organization last week in Chicago, Mr. Welch said warehouse stocks now total about 3.7 million tons. This is 1 million more than held before the strike in 1956. The build-up in supplies started early this year. (ENR Mar. 12, p. 22).

Larger supplies are most apparent in heavy structural items such as wide-flange sections. Because of the industry's increased production capacity, there isn't the shortage of plates and structurals that existed in 1956, according to Mr. Welch.

Most steel warehousemen at the convention said a strike "is a cinch" if the steelworkers stick to their current demands. (ENR May 7, p. 104). But the warehousemen approve the producers' firm stand against a wage increase. Judging from the 1956 walkout, a strike would close about 10% of the steel warehouses.

Producers contend that any wage increase would mean an increase in steel prices. This would quickly be reflected in the price of steel at the warehouses, which handle nearly 20% of all steel production.

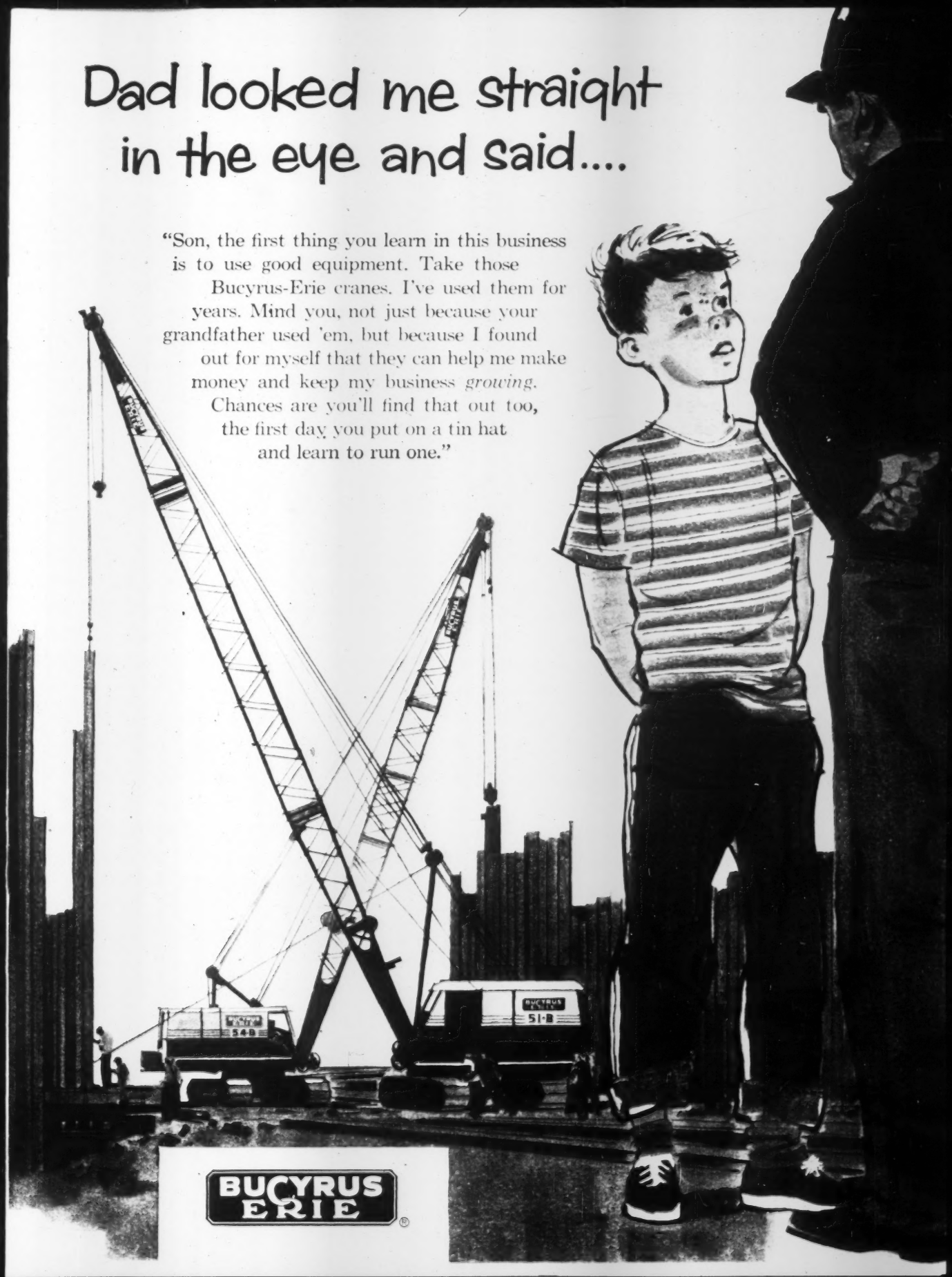
Mr. Welch describes current warehouse business as "very good." In the Chicago-Minneapolis-St. Paul area, demand is up 40% to 50% over the spring of 1958, mostly because of the high production schedules of manufacturers of farm equipment, appliances and other consumers' goods. Lesser increases are reported in other regions.

Mr. Welch estimated a "modest increase" in the number of steel warehouses handling imported steel in the past year. The association is conducting a study to determine what kind of steel is being imported and where it is being used.

Increases in steel imports are a source of mounting concern to the steel industry. A long strike this summer could increase the demand for foreign steel even further. American buyers are now scouring Europe for sources of steel they can tap in case of a strike.

Dad looked me straight in the eye and said....

"Son, the first thing you learn in this business is to use good equipment. Take those Bucyrus-Erie cranes. I've used them for years. Mind you, not just because your grandfather used 'em, but because I found out for myself that they can help me make money and keep my business *growing*. Chances are you'll find that out too, the first day you put on a tin hat and learn to run one."



BUCYRUS ERIE®

Specifiers Assail 'Or Equal' Clause

Architects and engineers battered away at the controversial "or equal" clause in specifications during the annual convention of the Construction Specifications Institute, Inc., in Chicago last week.

Consensus: It is obsolete and a more satisfactory substitute should be found.

The clause permits a contractor to substitute equivalent material or equipment for that specified. Many architects and engineers say it encourages use of cheap materials, causes delays and attracts irresponsible contractors.

The specification writer is the key to the problem, said architect Frank W. Crimp of Clinch, Crimp, Brown & Fisher, Boston.

"If the spec writer doesn't know his job," he said, "and if his integrity is questioned when he makes a determination on what is equal, the situation is hopeless anyway. I think we are asking altogether too much of the men bidding the job when we call for a listing of proposed substitutions with the bid. If the list of substitutions is called for after the bids are opened, the job is then opened up to bid peddling."

Terrell R. Harper, partner, Harper & Kemp, architects, Dallas, agreed with Mr. Crimp for specifications for private jobs but said government agencies required the "or equal" clause. He pointed out: "We have no choice when working for the Corps of Engineers or other agencies. Closed-type specifications and trade names are not possible here."

The "or equal" clause is not a problem in dealing with such manufactured items as windows, doors and pumps, but only with basic materials. That's the opinion of Morton E. Ackerly, a Pittsburgh specification consultant.

Mr. Ackerly suggested the employment of an outside body such as the CSI that could "establish a basis for competitive bidding from a functional and performance standpoint and certify whether or not the manufacturer's claims on his product are accurate."

"'Or equal' as a term has long passed its point of usefulness," he said. **"We need a new basis for our thinking to maintain competitive bidding, which is the basis of our industry."**

Kenneth Wilson, chief of the electrical-mechanical engineering division of F. J. Klingler & Associates, Eau Claire, Wis., also spoke against the "or equal" clause.

"Whether 'or equal' was justified a generation ago or not, we have outgrown it now and need to be more specific in using every characteristic of a given product."

An engineer, Donald G. Scripture of Scripture and Psihas, Detroit, took both sides of the question.

"Or equal" when used intelligently, he said, has its place in mechanical and electrical specifications.

But, "who has time to evaluate all products on the market?", he asked. The control should be by the engineer and architect when bids are opened, not after.

"If you allow 'or equal' to apply after a contract is let, it could result in: (1) encouragement of indiscriminate contractors (2) less authority for the architect and engineer (3) less savings to the client," he concluded.

The importance of objectivity in deciding whether one product is equal to another was stressed by Kenneth M. Schaefer, architect, Sverdrup & Parcel, Kirkwood, Mo.

Furthermore, he pointed out: "Initial cost need not enter in every time ... we must also consider the owner's future maintenance cost on the project as well as the reputation of the manufacturer and the kind of service he is able to give."

The 400 delegates to the CSI meeting reelected the following national officers: J. Stewart Stein, Franklin Park, Ill., president; Willard H. Barrows, New York City, vice president; Harry C. Plummer, Washington, D. C., secretary-treasurer; and George E. Lamb, Washington, D. C., was named executive secretary.

Cities Outpace Sewage Technology

We need a breakthrough in sewage treatment because sewage treatment needs of the future promise to become altogether too much for current technology.

That sobering note was struck last week by Gordon E. McCallum, chief of the U. S. Public Health Service's Division of Water Pollution Control. Addressing Purdue University's Fourteenth Annual Industrial Waste Conference, in Lafayette, Ind., Mr. McCallum said:

"The task of collecting, treating and disposing of wastes from today's metropolitan areas is already taxing the limits of our present knowledge. Problems of tomorrow's super cities stagger the imagination."

Even cities with "complete" treatment of their sewage are causing trouble downstream, he indicated. They are simply outgrowing the capabilities of their streams, he pointed out.

And without water, even an engineering wonder might not be adequate, Mr. McCallum reminded his listeners. The Chicago Sanitary District's sewage system was cited by the American Society of Civil Engineers as one of the seven wonders of modern engineering, he recalled, but testimony has been presented to Congressional committees that nuisance conditions and even health hazards exist in the Illinois Waterway, which receives the discharge from Chicago's sewage plants.

"It has been noted that under sustained low stream flow, the dilution available to Chicago, Indianapolis, Columbus and Dayton varied from 0.14 cfs per 1,000 population in Columbus to 0.65 cfs per 1,000 population in Dayton," Mr. McCallum said. Predicted population increases will reduce these dilutions 35% to 40% by 1980, he pointed out. Compare these dilutions, he said, with the stream flow of 4 cfs per 1,000 population often considered necessary for assimilation of sewage after primary treatment only, or 0.6 cfs per 1,000 population for "completely" treated sewage.

"Admittedly, this 'rule-of-thumb' criterion is crude," said Mr. McCallum, "but the warning it gives is ominous."

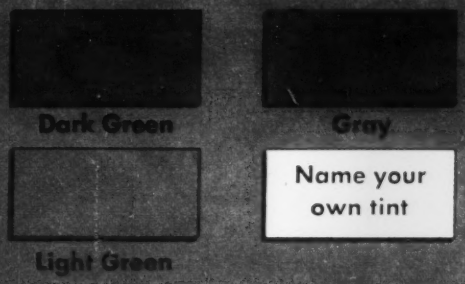
Mr. McCallum said reuse of waters in such rivers as the Ohio and the Miami (Ohio tributary) is reported to be already more than three times the dependable low flow.

"Will our waste-treatment practices be adequate to meet the high rate of turnover by 1980," he asked, "when predicted total water use will exceed available supply by 100 billion gallons per day, and when a six-time reuse of many streams is projected?"

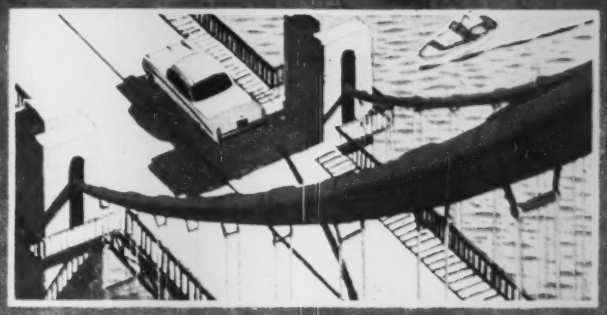
Needs in other days have brought us to milestones of progress, Mr. McCallum said. For example, in an outstanding example of an effort to meet a need, Mills, Drown, Hazen and Sedgewick "demonstrated in 1887 the biological nature of sewage treatment," he said. But now, 43 years have elapsed since the last development of basic sewage treatment process, activated sludge, in 1916.

"Is it presumptuous," he asked, "to hope for a new breakthrough?"

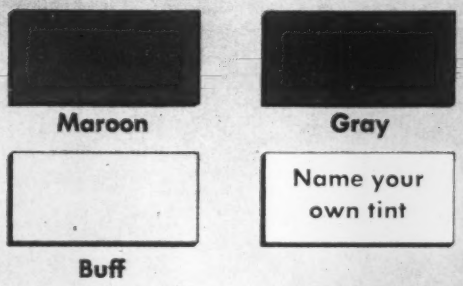
Mr. McCallum keynoted the three-day conference. Fifty-odd other speakers also delivered papers.



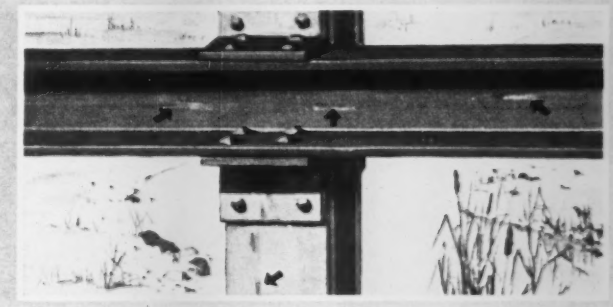
Never before weather-resisting tinted *finishes* that are also rust inhibitive . . .



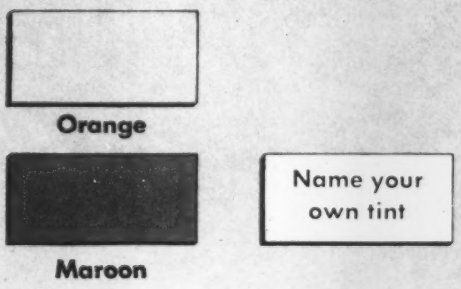
Now you can give steel structures distinctive color . . . or decorative color . . . along with greater durability than ever



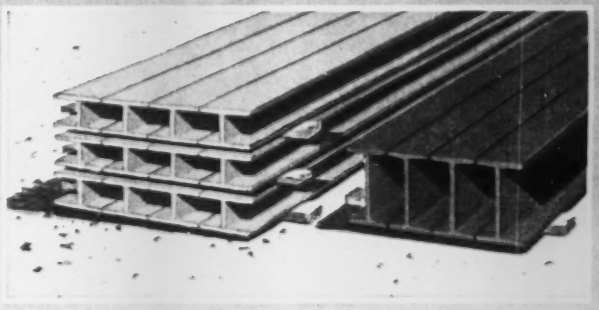
Never before tinted *intermediates* that are *both* weather resistant and rust inhibitive . . .



Now you can specify intermediate colors in sharp contrast and aid visual inspection for "holidays"



Never before anti-corrosive *primers* that are also tintable and weather resistant.



Now you can eliminate on-the-job mix-ups by using structurals shop-primed in *coded* M50 pigment colors

Proof M50 pigment Defense in Depth paints deliver color opportunities entirely beyond those of ordinary anti-corrosive paints

Wide color choice has never before been available in *all* coats of anti-corrosive specification paint systems. Now *M50® basic lead silico chromate pigment* gives you an entirely new color specification freedom . . . in primers as well as intermediates and finishes . . . along with all-coat rust inhibition, all-coat weather resistance. Some of the opportunities this presents are suggested above. You'll think of others.

M50 Defense in Depth

. . . And never before such *durable* color. See next page for proof . . .

National Lead Company

General Offices: 111 Broadway, New York 6, N. Y.

For more facts, turn page

A. No visible discoloration from atmospheric conditions

Contrast areas marked **A** in photo (top at right) of paint test panels exposed 18 months. You can see *M50* pigment paint is free of discoloration caused by atmospheric conditions.

B. No objectionable whitening from normal chalking

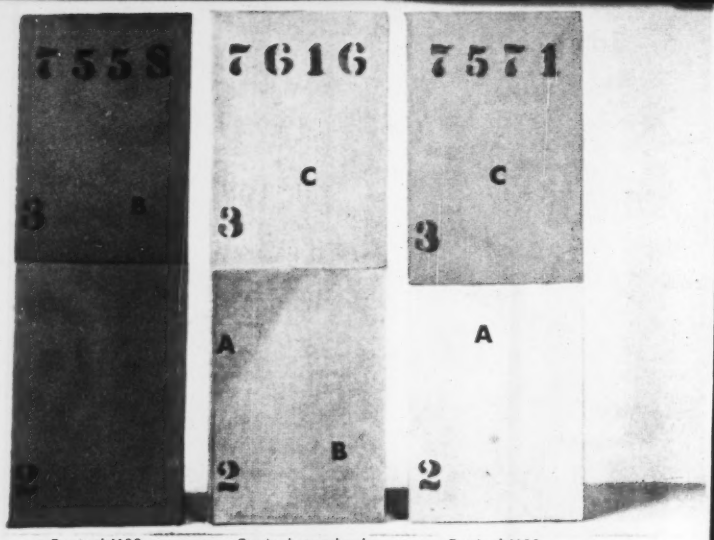
Now compare areas marked **B**. Notice the brightness of color in the *M50* pigment paint. A finger drawn across this paint shows no mark from rubbed off chalk.

C. No noticeable leaching from water action

Look closely at areas marked **C**. Can you see where the non-*M50* paint has been leached by rain water to expose vertical brushmarks in the undercoat? Insoluble *M50* pigment prevents this film failure.

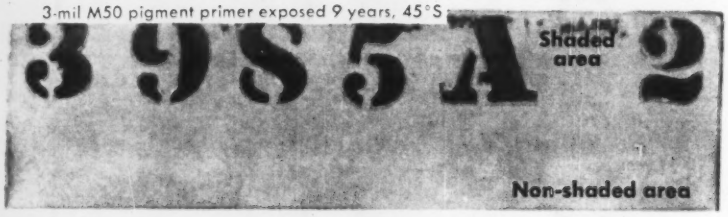
D. No excessive fading from light action

This time examine the close-up (bottom photo at right) of a 9-year *M50* pigment primer exposure test. Contrast between the area shaded by a wooden panel holder and the non-shaded area shows excellent tint retention conferred by *M50* pigment.



Typical M50 pigment paints | Typical standard specification paints | Typical M50 pigment paints

3-mil M50 pigment primer exposed 9 years, 45°S



M50 pigment paint tints stay brighter, retain hue longer ...they're protected against all 4 causes of color loss

No need to amplify what the illustrations on this and the preceding page show. Plainly, *M50** pigment Defense in Depth paints give you more color freedom, more color durability than ever before available in metal protection paints. More rust inhibition, more weather resistance, too. In every coat!

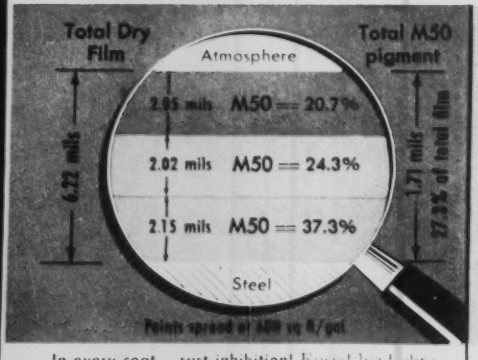
Where to get *M50* pigment Defense in Depth paints

National Lead makes the pigment, not the paints. So the place to go for *M50* pigment specification paints themselves is your regular supplier. However, National Lead can help you familiarize yourself with these new paints in four ways: (1) show you *M50* pigment paint exposure test panels at its Sayville, L. I. Test Station; (2) send you a 24-page descriptive brochure, "Defense in Depth." (Mail coupon below); (3) provide technical aid in test applications; (4) help you develop suitable specifications for paints containing *M50* pigment.

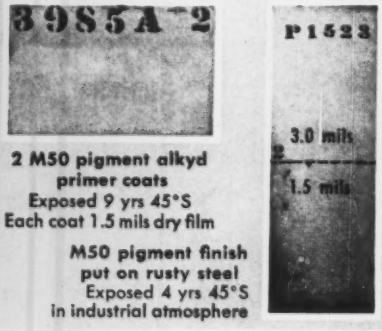
For M50 pigment paints themselves, contact your regular suppliers.

* National Lead Company trademark for a basic lead silico chromate pigment

Why M50 Defense in Depth paints give you metal protection beyond all former concepts



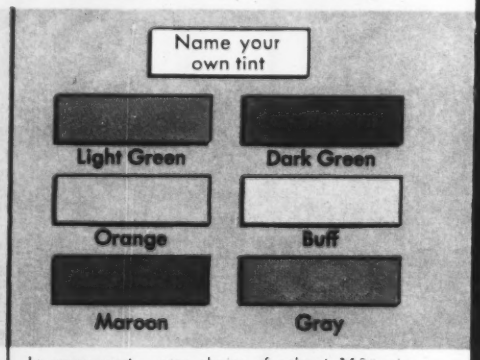
In every coat... rust inhibition! Fused lead chromate is noted for rust inhibition. The *M50* pigment particle structure permits paint makers to include large proportions of lead chromate in all coats of anti-corrosive systems.



2 M50 pigment alkyd primer coats
Exposed 9 yrs 45°S
Each coat 1.5 mils dry film

M50 pigment finish put on rusty steel
Exposed 4 yrs 45°S
in industrial atmosphere

In every coat... weather resistance! *M50* pigment is insoluble in water and has the excellent tint retention properties of fused lead chromate. Unlike other rust inhibitors, it actually boosts weather resistance of paints.



In every coat... your choice of colors! *M50* pigment gets along well with most tinting pigments, permits paint makers a wide range of colors...not only in intermediates and finishes but in primer coats as well. Colors stay true.

M50 Defense in Depth

National Lead Company,
111 Broadway, New York 6, N. Y.

Gentlemen: Please send me your 24-page brochure, "Defense in Depth." Include color card of the six *M50* pigment paints you recommend for steel highway structures.

Name _____ Title _____
Firm or Dept _____
Address _____
City _____ State _____

With derrick set on roof . . .

Steel is placed in tight space

Erecting Steel From the Top Down

The 16-story, $1-million addition to the Employers Casualty Co. building now under construction in Dallas measures only 36 x 86 ft and is joined on two sides by two-story buildings. This cramped space presented a difficult problem to the steel erectors—Erectors & Riggers, Inc., of Houston—because it made the use of a guy derrick impractical.

The solution, worked out by engineer Jim Hulse, was to use a 10-ton capacity stiffleg derrick on top of the adjoining 16-story structure. Mr. Hulse believes this to be the first time a derrick has been set on an occupied multistory building to erect another building, an arrangement that was possible because the insurance company owned both buildings.

The stiffleg derrick was hoisted in sections up the outside of the 16-story structure and assembled in position on the roof with one leg welded to the building framing and the other lashed in place. The derrick has a 35-ft mast and 100-ft boom.

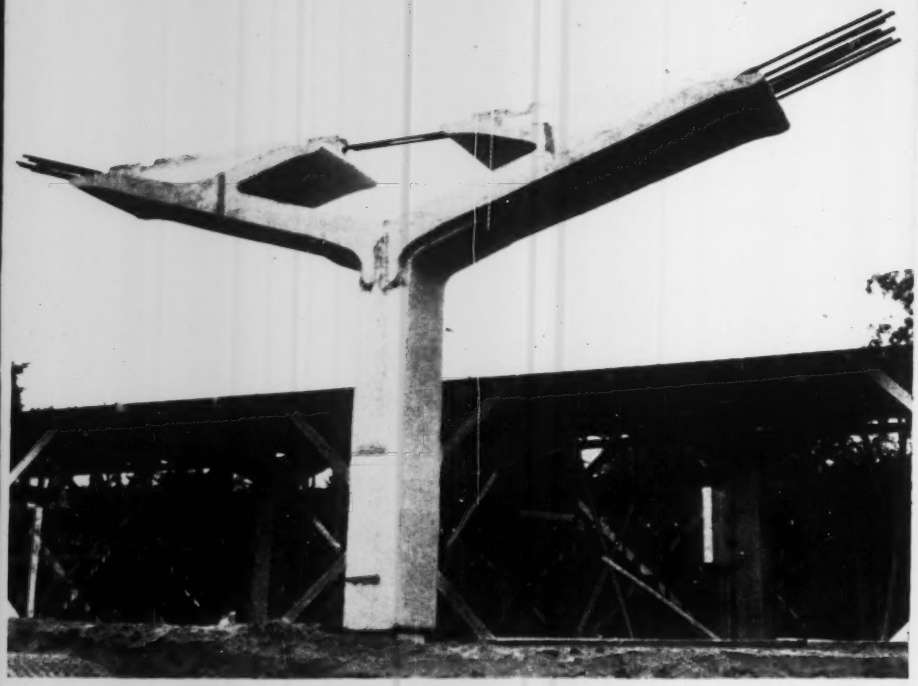
An engineer on top of the building directs two air tuggers, which are used to swing the bullwheel. The main hoisting engine is located at street level. The operators of the hoisting equipment and derrick and the steel crew maintain constant telephone contact.

The site of the derrick enables the crew to erect all steel from one location.

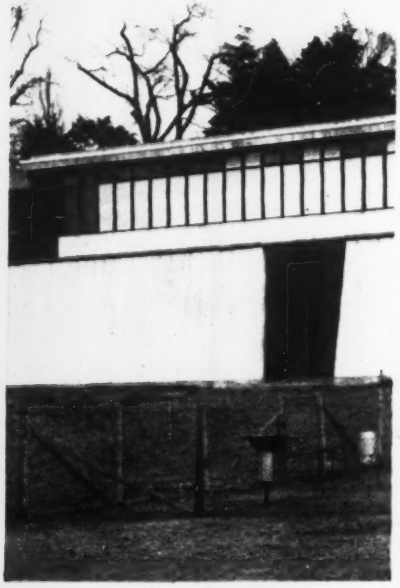
Four men erected the stiffleg derrick in six days. A guy derrick would have required seven set-ups, so Erectors & Riggers estimates that five to eight working days were saved on the building. Cost of setting up the stiffleg was greater than for a guy derrick, but overall cost will be less.

Building time on the addition is 15 months; crews are now shaking out the seventh and eighth floors.

George L. Dahl of Dallas is the architect and engineer. Robert E. McKee Co. is the general contractor.



Y-shaped, precast concrete columns support . . .

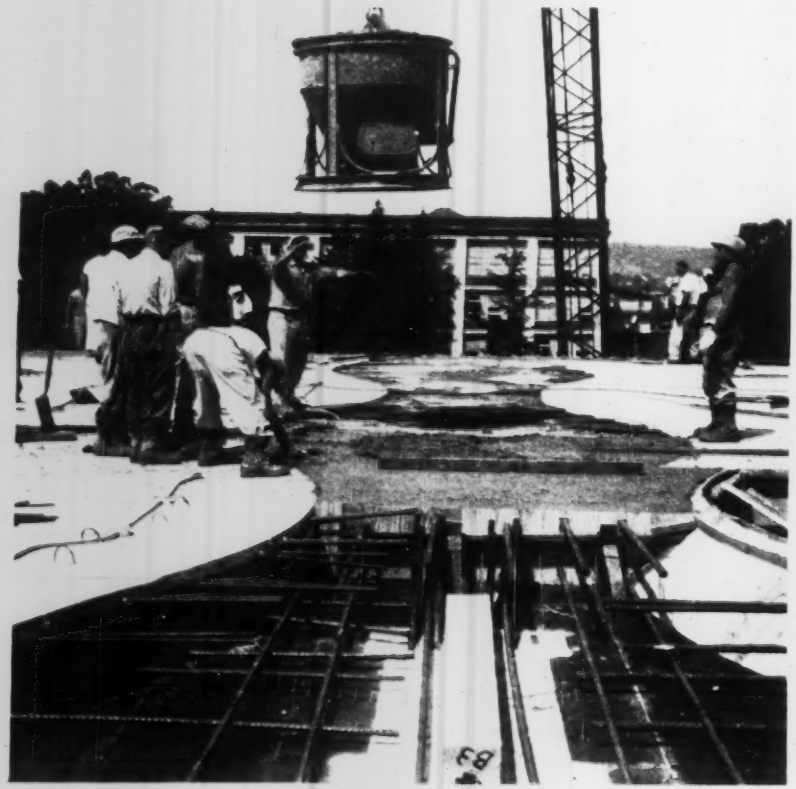


Roof of precast panel

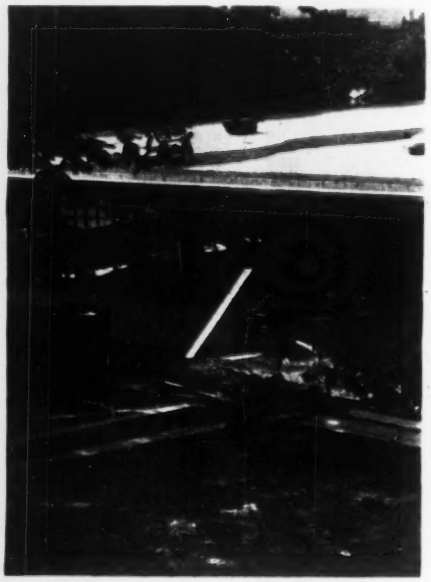
Concrete Trees Carry Forestry

Concrete trees support the superstructure of Yale's new School of Forestry building in New Haven, Conn. The $700,000 Greeley Memorial Laboratory is a 106x169-ft, one-story building with a half basement on a hillside.

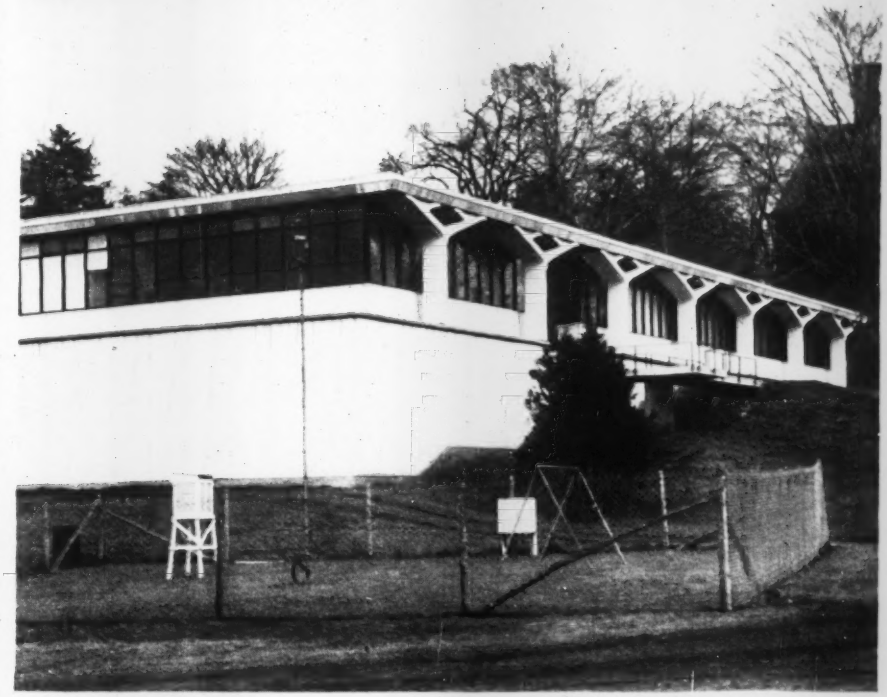
Twenty-eight precast concrete columns with split, branching tops carry a



Roof panel ends shape the beam strips over columns into . . .



Stress diagrams, with strips'



sections laid in three bays across width of the building.

Lab Roof at Yale

roof composed of intricately shaped precast concrete panels. These channeled-out panels are supported along four column lines by wide, wavy cast-in-place beam strips.

The roof panels are 3 ft wide and vary from 21 to 27 ft long; they have concave and convex rounded ends. In the final structure there is a sine-wave-shaped line running the length of the building at the juncture of the precast sections and the beam strips. Five basic panel shapes produce the wave pattern.

The cast-in-place beam strips are widest at the columns, where shear stresses are greatest, and narrowest at the middle of each bay side, where stress is least. The architect and engineer obtained a novel looking design and a built-in shear diagram at the same time. Interior walls are glass for the top three feet, so that ceiling pattern carries uninterrupted the length of the building.

Footings for the laboratory go down to a sharply dropping bedrock strata in the sloping hillside.

On the downhill side, the basement level is completely above grade. Here, the concrete foundation wall is battered on the outside and faced with precast, exposed aggregate panels. These sloped panels on either side of a large central opening give an Egyptian motif to the end of the building and form a broad base for the superstructure above.

The superstructure is a 4x7-ft grid of the precast Y columns on a 24x34 ft bay layout. Exterior walls are set in from the outside columns on both sides of the building to accent the unusual shape of the supports.

These exterior walls are precast concrete panels with exposed white marble aggregate. They rise waist high in alternating slim and wide trapezoidal shapes. This pattern is laid out so the slim panels, pointing up, coincide with flat steel window mullions above. Windows form a continuous band around the building from panel tops to the roof.

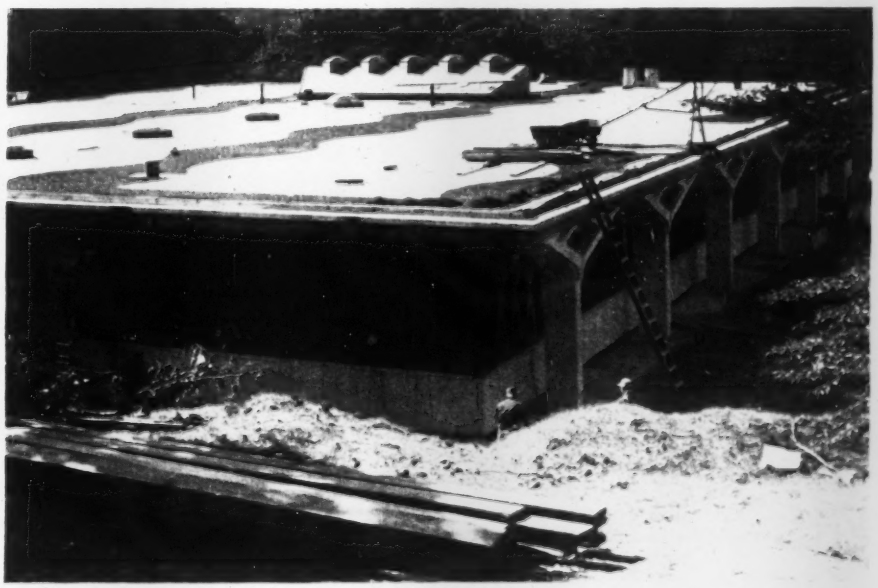
Constructing the building was an intricate job. Precasting was done off site while foundations and the ground floor slab were going up. The builder placed all the columns and roof panels with a truck crane. Placing the four ton roof panels on the flat roof-beam staging had to be done accurately—less than ½ in. tolerance was allowed. Formwork, particularly at the roof spandrel, was just about a cabinet maker's job.

The channeled precast planks are 17 in. deep. From below, the constant depth channelling tapers in width from the center toward each end.

Molds for these panels were wood and plaster and required careful maintenance as casting went on. Roof panel concrete contained light-weight, expanded-shale aggregate in an eight-bag mix of regular type-portland cement. Concrete weight is only 110 lb per cu ft, but compressive strength is 3,500 psi.

Paul Rudolph, Chairman Yale School of Architecture, and Charles Brewer of New Haven are the architects. William Grinderenq, in charge of Mr. Rudolph's New Haven office, is overseeing the job. Henry Pfisterer of New Haven is the structural engineer.

Dwight Building Co. of Hamden, Conn. is the general contractor. Richard C. Macom, vice president of the firm, is in charge of the project. Precasting was done by the Dextone Company at their New Haven plant.



widest area over supporting columns, narrowest at midspan.

Quickly, easily Steeltex goes down at superbly designed Canevin High School, Pittsburgh, where 60,000 square feet of Steeltex support concrete floor slabs. Architect: Celli-Flynn, McKeesport, Pa. Contractor: Navarro Corp., Pittsburgh. Steeltex from Pittsburgh Steel Co. was specially commended for its installation features on this project.

Architect, Contractor Find . . .

Steeltex Saves 35 Cents per Square Foot

"I estimate we saved about 35 cents per square foot by using Steeltex instead of another material on the Baptist Hospital addition in Pensacola. Steeltex' quick installation also helped us meet our construction timetable easily."

Man speaking: President Raymond C. Dyson of Dyson and Company, Pensacola, Fla., general contractors.

Job: $1\frac{3}{4}$-million addition to Baptist Hospital. Here, Pittsburgh Steel Company supplied 70,000 square feet of Steeltex, the waterproofed, paper-backed wire mesh reinforcing used in the concrete floors and roof slabs.

Like Mr. Dyson, Architect Charles H. McCauley has used Steeltex for more than 20 years. He, too, knows Steeltex helps provide better construction at lower costs.

"I specified 100,000 square feet of Steeltex when the main hospital building was erected eight years ago," said Mr. McCauley. "Naturally, I specified it again when the addition was built. I think this shows I am enthusiastic about the qualities of Steeltex."

• **Cost 30-40 Percent Less**—Similar comments came from Cleveland where Architect Eugene W. Gray and Contractor William Passalacqua were responsible for constructing the new $600,000 Child Welfare Division Building.

Mr. Gray and O. E. Kronenwetter, chief engineer for Passalacqua Builders, estimated that 30,000 square feet of Steeltex in floor slabs cost 30 to 40 percent less than methods generally specified.

• **On Pittsburgh Job**—When Steeltex was combined with Pittsburgh Steel's wire mesh to support 60,000 square feet of concrete floor slabs at Canevin High School in Pittsburgh, Steeltex was specially commended for its installation features.

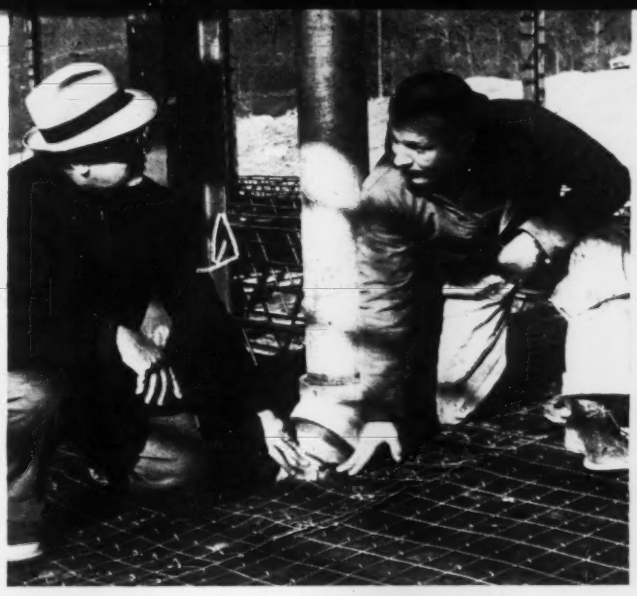
Joseph V. Cutuly, job superintendent for the general contractor, Navarro Corporation of Pittsburgh, likes Steeltex because "it takes more punishment during installation than a sheet metal, goes down faster and is much easier to handle."

Dean Regan, foreman of the crew that installed Steeltex in the $2\frac{1}{2}$-million building, has used Steeltex on more than 55 jobs in ten years.

"Steeltex is very easy to install. Just unroll it, cut, tighten and clip," he said.

• **Makes Stronger Slab**—William B. Tabler of New York City, architect for the $2\frac{1}{2}$-million Hilton Inn at the San Francisco Airport where 65,000 square feet of Steeltex supports the floors, pointed out additional Steeltex features. Said Mr. Tabler:

"Steeltex retains moisture and cement to a greater degree than lath. This makes a cleaner job. Also, the sag from the concrete cradled in the Steeltex gives additional lateral resistance which aids earthquake construction."



Snug fit of Steeltex around drain pipe at Canevin High School is shown by Joseph V. Cutuly, job superintendent (L), and Foreman Dean Regan. Mr. Cutuly says, "Steeltex takes more punishment during installation than a sheet material, goes down faster and is much easier to handle."

At luxurious Hilton Inn, San Francisco Airport, 65,000 square feet of Steeltex in floor slabs aid earthquake construction. Architect: William B. Tabler, New York City. Contractor: Cahill Construction Co., San Francisco.

• **New Users Like Steeltex**—Steeltex also is endorsed by new users such as the architectural firm of Charles Bacon Rowley and Associates, Inc., and Ernst Payer, and Contractor Albert M. Higley Company, both of Cleveland. They teamed up on building the $805,000 Western Reserve Historical Society Museum in their city.

Superintendent Albert M. Higley Jr. estimated "perhaps a four percent savings was realized by using 11,500 square feet of Steeltex instead of placing conventional roof structures."

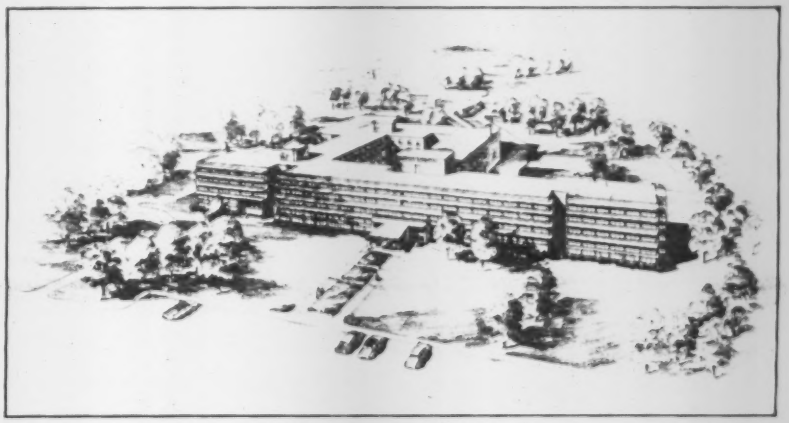
• **Will Use Again**—Another satisfied new user is Irving D. Robinson, architect for the new $325,000 Luria Brothers Building in Cleveland.

Mr. Robinson said: "This is the first time I specified Steeltex and I am sure I will use it many times again. Steeltex permitted work to continue on the floors without planking or scaffolding, although the concrete slab was not poured for many weeks after the 12,000 square feet of Steeltex were installed." Contractor for the job was J. L. Hunting Company, Cleveland.

Whether you are a veteran Steeltex user or a newcomer, you cannot afford to pass up using Steeltex on your next construction job.

Trained sales engineers are available to help solve your construction problems. Put them and Steeltex to work for you soon.

Contact the nearest Pittsburgh Steel Products sales office listed at right. Call today . . . you'll be glad you did.



$24,500 was saved on cost of material and labor by using 70,000 square feet of Steeltex in the Baptist Hospital addition in Pensacola. Architect: Charles H. McCauley, Birmingham. Contractor: Dyson and Company, Pensacola.

▶ **See Sweets Catalog Section 2-B**

Steeltex®

Pittsburgh Steel Products

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Add air to the mix with DAREX AEA and millions of lubricating air bubbles become permanently imbedded in the finished concrete. Controlled air makes the concrete frost-resistant and a whale of a lot more durable. DAREX AEA introduces and controls it.

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Take our words for it: WRDA and DAREX AEA. Together they mean letter-perfect concrete.

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DIVISION OF W. R. GRACE & CO.
Cambridge 40, Massachusetts
San Leandro, Calif. • Montreal 32, Canada

WRDA

DAREX AEA

In France, concrete towers and prestressed concrete anchorages will be key features of . . .

Europe's Longest Suspension Bridge

A. W. Coutris
Freyssinet Co., Inc.
New York, N. Y.

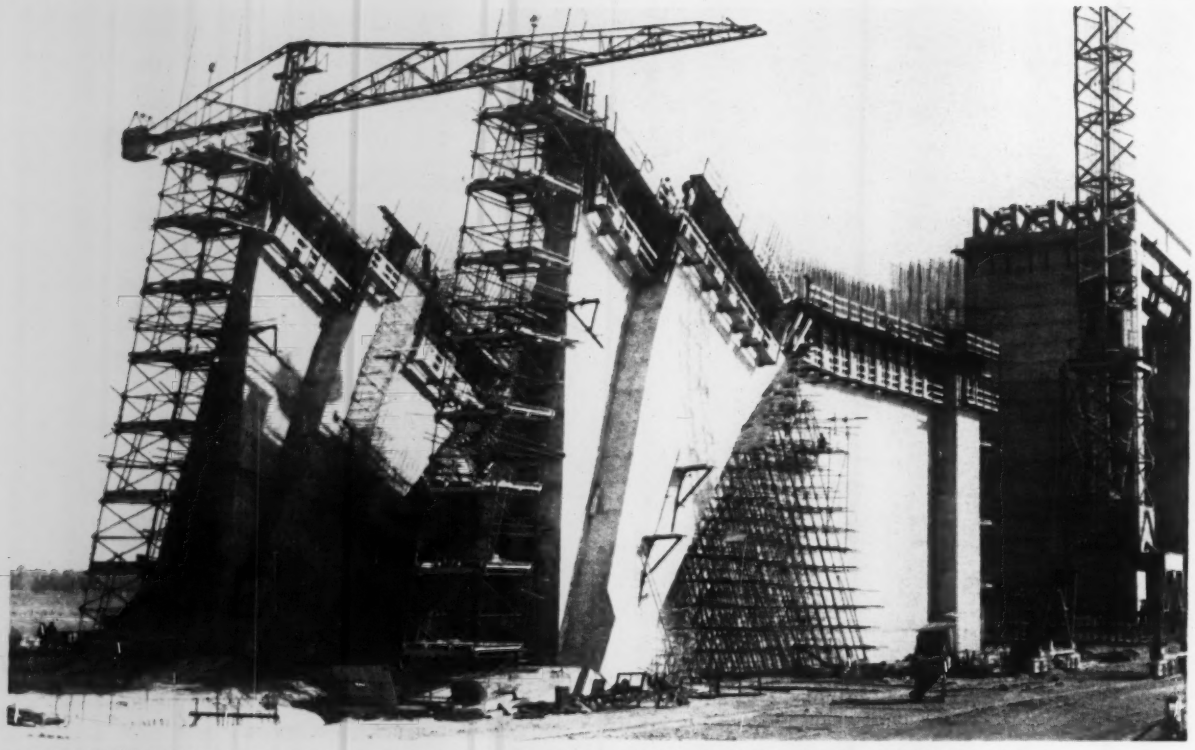
The picturesque countryside of the small village of Tancarville, France, eighteen miles from the seaport of Le Havre, is the construction site of one of Europe's most notable bridges. Of suspension type (ENR Jan. 10, 1957, p. 58), the bridge crosses the Seine River with a main span of 2,000 ft, which will be the longest in Europe until the 3,300-ft span Firth of Forth Bridge, just started in Scotland, is completed.

The Tancarville Bridge is scheduled to be opened in July. It will have two suspended side spans of 576 ft and an approach viaduct on the left (south) bank consisting of eight, 164-ft concrete girder spans. Thus the overall length of bridge structure to 4,592 ft. There is no approach viaduct on the right bank; it is a high cliff at the level of the bridge roadway, 168 ft above high water in the river.

Several features of the structure make it one of the most unusual suspension bridges in the world. The most notable among these is the huge prestressed left bank anchorage, which economized significantly over a conventional anchorage. Prestressed concrete is also used in the tunnel-type anchorage in the right bank cliff and for the forty 164-ft girders in the spans of the left bank approach. The bridge also contrasts with others in that its towers, 408 ft high, are concrete instead of steel.

A toll structure, the Tancarville Bridge will be operated as a concession by the Le Havre Chamber of Commerce. Partly financed by the French government, its design and construction supervision are being handled by the federal bridge and road organization (Service des Ponts et Chaussees). The bridge will be the first built in the 75 miles between its mouth at Le Havre and Rouen. Navigation requirements dictated its 2,000-ft central span and its 168-ft vertical clearance.

• **Prestressed box anchorage.** The unusual left bank anchorage consists essentially of two huge walls about 150 ft high. Battered on their front faces, the walls are 154 ft long at the base and 132 ft long at the top. Paralleling the bridge and spaced 52.5 ft center to center, the walls are 13 ft, 9 in. thick in the most heavily stressed areas, and 4 ft, 3 in. thick elsewhere. Diaphragms



PRESTRESSED WALLS and a rear counterweight provided an economical design for the box-type left bank anchorage.

and the roadway slab connect the walls. In the upper rear area of the anchorage provision has been made for a 4,500 ton counterweight of lean concrete.

Each end of each wall rests on a foundation caisson — the front end through a concrete hinge, the rear end through a neoprene rubber bearing.

The anchorage contains 13,650 cu yd of reinforced and prestressed concrete and weighs about 40,800 tons. Opposed to this is the maximum cable pull of 19,200 tons. Resolution of these two forces gives an inclined force of 17,400 tons to be transmitted by each concrete hinge to the inclined bearing face of each of the two front foundation caissons. The rubber bearings used on the rear caisson undergo translation and rotation. All the horizontal force is, therefore, resisted by the two front caissons.

Prestressing within the anchorage is accomplished with 634 cables in each wall. Each cable is made up of twelve 0.276-in.-dia wires and anchored with conical concrete wedges. A total of 192 tons of high tensile wire was required. After the cables were installed and prestressed, the entire prestressed cable assembly was grouted.

• **Prestressed tunnel anchorage** — Prestressing again offered a highly economical solution to the problem of anchoring the bridge cables in the right bank rock cliff. Here two inclined shafts 265 ft long were excavated 52.5 ft apart (in alignment with the bridge cables) and connected at the bottom by a transverse tunnel. Prestressed concrete tie members 12 x 15 ft in section, but hollow for most of their length for an access gallery—were constructed in the lower 190 ft of the inclined shafts. In the transverse tunnel a reinforced concrete beam, 28 x 31 ft in section, was cast to connect the bottom ends of the ties. The bridge cable pulls, which are brought to this beam through the ties, cause it to bear against the rock with a pressure of 6 tons per sq ft.

In each of the ties were embedded one hundred and twenty 24-wire cables made up of 0.276-in.-dia wires anchored with button heads. Subjected to a prestressing force of 11,520 tons, the cables permitted the concrete to resist the 9,600 ton maximum tensile force in each of the bridge cables without any danger of tension in the concrete.

At the upper ends of the ties steel castings are installed to engage (through connections formed by molten metal) the ends of the strands of the bridge cables, which are splayed out in the open upper end of the inclined tunnels. Each casting is attached to the prestressed concrete tie by three 2¼-in.-dia anchor rods, 20 ft long. A similar bridge cable-anchorage connection detail is used in the left bank anchorage.

The material quantities in the right bank tunnel anchorage are 3,940 cu yd of concrete, 140 tons high tensile steel wire and 96 tons of mild steel reinforcement.

• **Prestressed girders** — Post-tensioned, prestressed girders provided an efficient means of constructing the left bank viaduct. Each of the eight simple spans contains five girders approximately 164 ft long and 10 ft deep, with a web thickness of 6.4 in. Each girder weighs 144 tons.

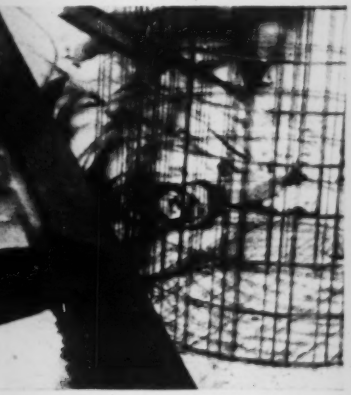
The girders were prefabricated in a central plant set up on the bridge site. Transported to the piers on industrial rail cars, they were lifted into position by special hoisting rigs shown in one of the accompanying illustrations. A 6-sheave pulley block was used, with the line operated by a 100 hp winch on the ground. It required about half an hour for the rigs to lift each beam into place.

The prestressing of each girder was achieved by twenty-two 12-wire cables. Fourteen of the cables were tensioned while the beam was on the ground. The other eight cables were stressed after the diaphragms and deck slab had been placed.

Neoprene rubber bearings were employed throughout, permitting a displacement of plus or minus 0.8 in.

Quantities for the deck of the entire

Pre-stressed concrete structural member removed from forms which have been sprayed with Shell Form Compound. Note the smooth, pit-free surfaces.



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—new release agent for concrete forms

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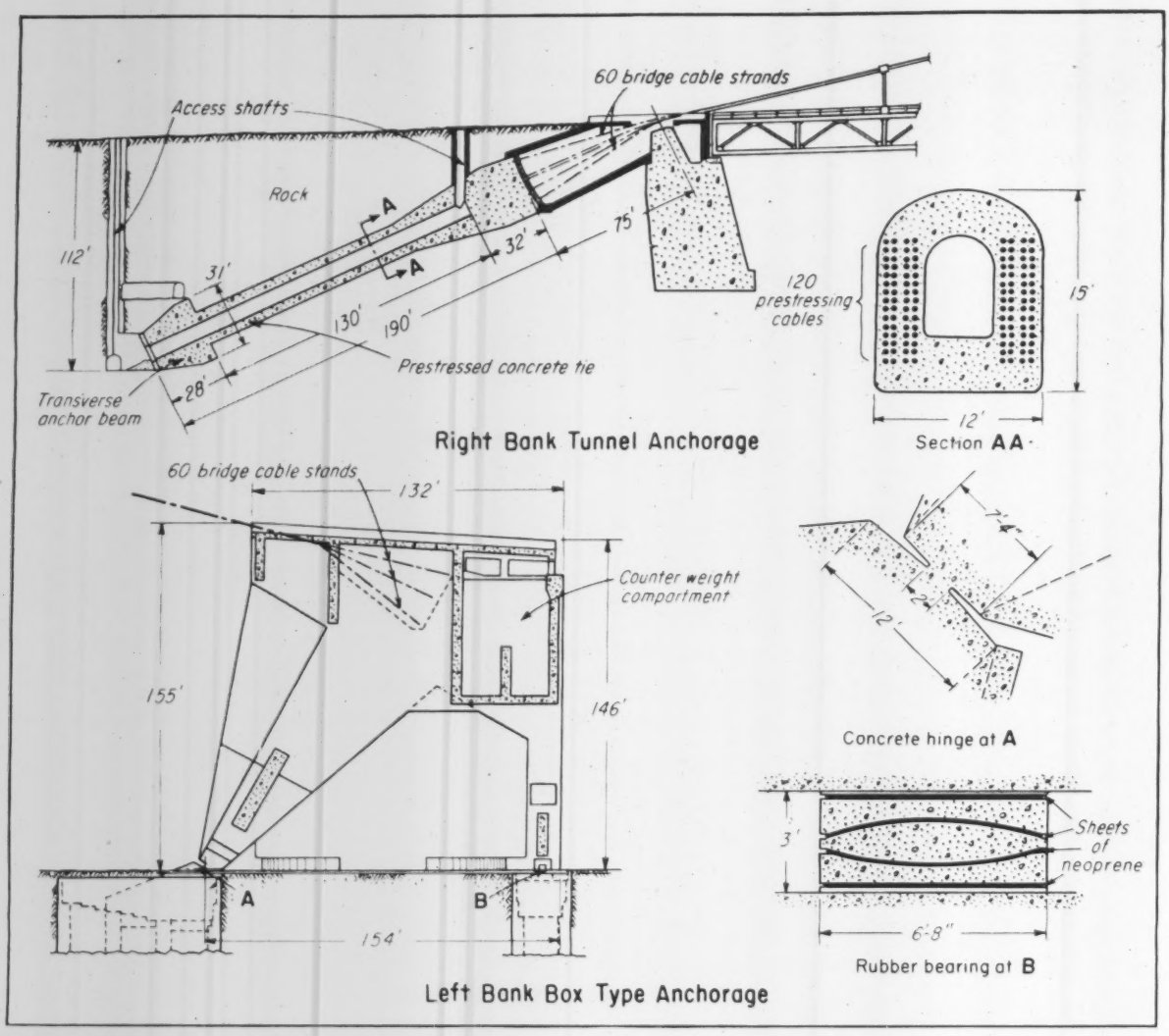


ANCHORAGES of radically different designs are used at the two ends of the Tancarville Bridge to fit the contrasting topography. Prestressed concrete is used in both anchorages.

viaduct are 2,180 cu yd of prestressed concrete for beams, 980 cu yd for diaphragms and slab. Also 210 tons of high tensile wire and 180 tons of mild steel.

During construction, a series of tests was carried out to determine accurate friction coefficients for the steel cables in metallic sheathing. For non-greased cables, the curvature coefficient was found to be 0.22, the wobble coefficient, 0.001. For cables lubricated with a soluble oil, the curvature coefficient was found to be 0.18, the wobble coefficient 0.0003.

As a result, theoretical elongations were computed by the pair of values (0.20 and 0.0003). Close agreement between measured and calculated strains was always found, and the effectiveness of inexpensive lubricants in reducing friction to a negligible consideration was clearly demonstrated.

Grouting of the cables was controlled with considerable care. Also before grouting all of the oil on the cables was flushed out with a water jet to be sure that the necessary bond was not impaired. On the basis of measurements it can be concluded that practically all of the space available for grouting was filled.

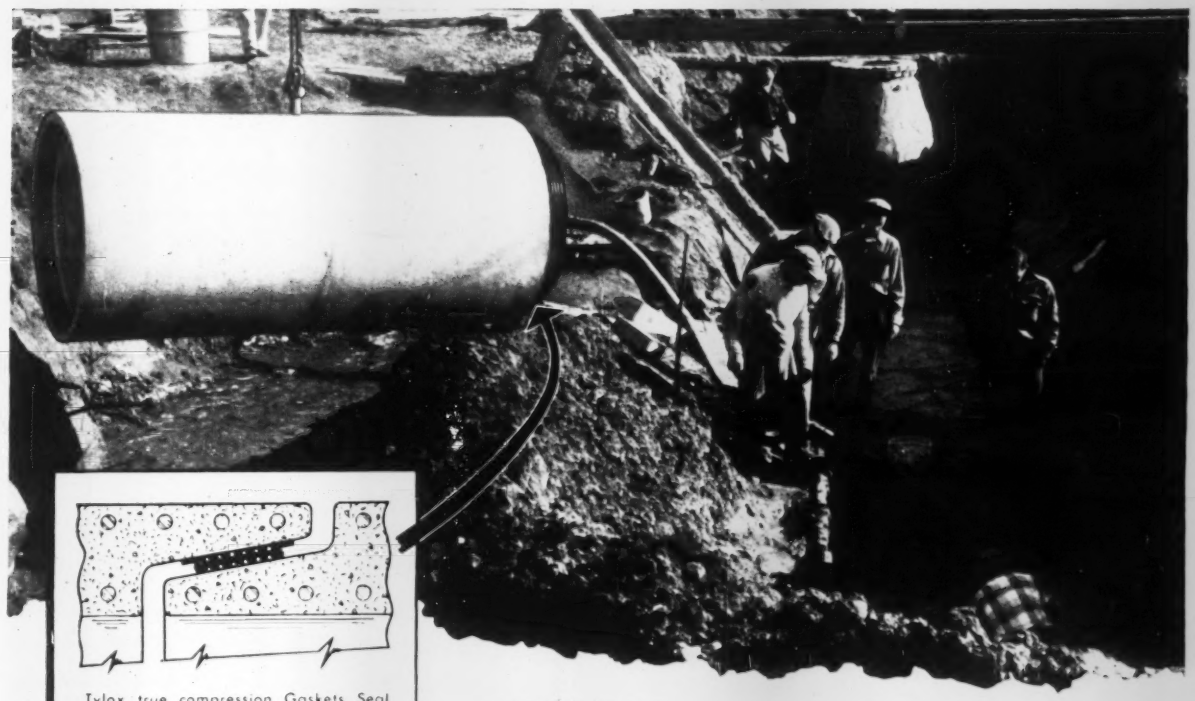
The rubber neoprene bearings represent an interesting development over classical types. The horizontal reaction developed by the bearing is proportional to the displacement and nearly independent of the vertical load. The result is a decided reduction in the bending moments of the piers as contrasted to that which arises from the use of traditional bearings.

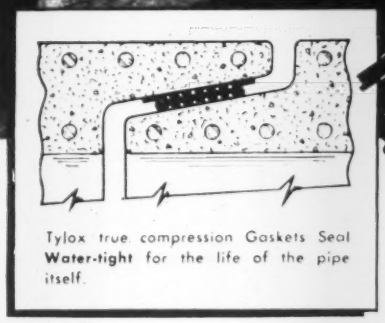
• **Who did it**—The project was designed and is being built by the following combine of twelve French designer-contractor organizations: Baudin-Chateauneuf; Boussiron; Campenon-Bernard; Dayde; Compagnie de Fives-Lille; Societe des Forges et Ateliers du Creusot; Fougerolle; Societe Francaise d'Entreprises de Dragages et de Travaux Publics; Regie Generale des Chemins de Fer et des Travaux Publics; Entreprise des Grands Travaux Hydrauliques; Compagnie Industrielle de Travaux; Compagnie Francaise d'Entreprise; Anciens Ets. Leon Dubois.

The author wishes to thank the above organizations and the Le Havre Chamber of Commerce for supplying the information enabling the preparation of this article and for permitting its publication.

He is further indebted to P. Lebelle, director, Institut Technique des Batiments et des Travaux Publics and consulting engineer to Campenon-Bernard, designer and builder of the left

Keeping new sewer lines from leaking...





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The project, by Millcreek Township Sewer Authority, Erie County, Pa., is a $1,000,000-plus project including 45 miles of sewer laterals, trunks, mains and pumping stations. Engineering is by Consoer, Townsend & Associates, Consultants, Chicago, Ill., and Fred Gorenflo, Resident Engineer, Erie, Pa. Contractors are Berlanti Construction Co., Harrison, N. Y., and Milano Construction Co., Erie, Pa. Pipe using TYLOX Gaskets was furnished by Concrete Pipe Company of Ohio.

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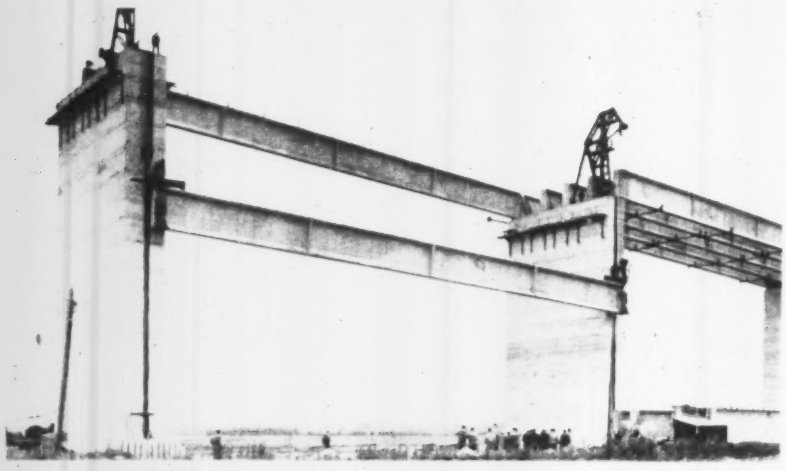


SPECIAL HOISTING RIGS utilizing 6-sheave blocks were used to erect the 144-ton prestressed concrete girders in the Tancarville Bridge south approach.

bank prestressed approach viaduct; to M. Tourasse, director, Compagnie Industrielle de Travaux, designer and builder of the left bank anchorage; and to J. Longerolle, president, Entreprises Boussiron, designers and builders of the right bank anchorage for information about their respective structures.

Tancarville: Vital Statistics

Foundations: Right bank tower—two 9-well caissons 40 ft square sunk by open dredging and seated under compressed air at a depth of 60 ft on clay. Left bank tower—a single 10-well caisson, 40 x 112 ft, sunk by open dredging through sand and gravel to a depth of 95 ft.

Anchorages: see text of article.

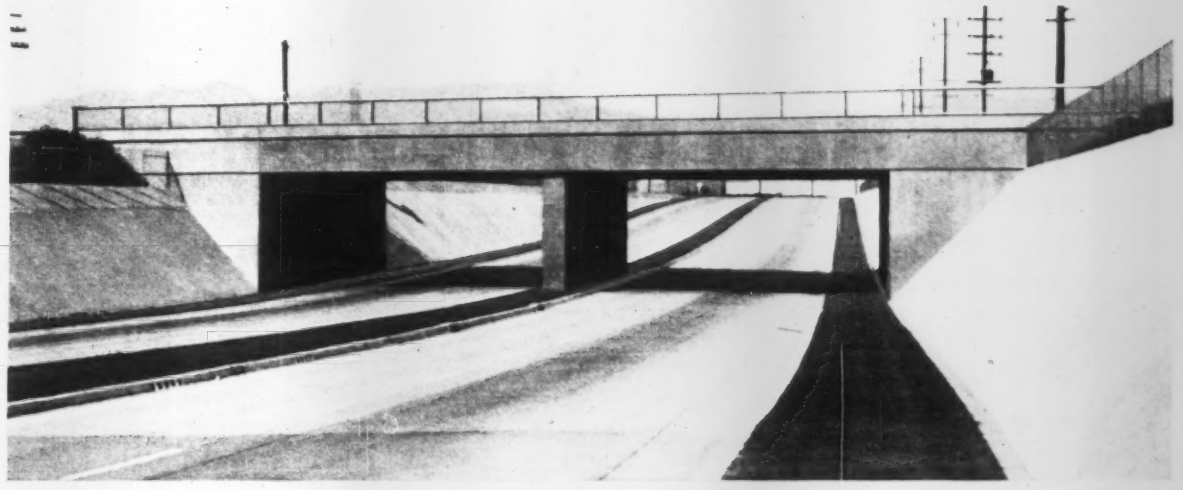
Towers: Of reinforced concrete; 402 and 398 ft high. Legs have a constant thickness of 15 ft 3 in. and a width varying from 21 ft 6 in. at the base to 10 ft at the top. Each leg contains a central open shaft 4 ft square, equipped with a ladder. The legs are joined just below the roadway level by a beam 7 ft, 3 in. wide and 11 ft, 6 in. deep; also by a 50-ft-deep diaphragm, 32 in. thick at the top of the tower, and by a similar diaphragm continuous from the base of the tower up to the roadway beam. Maximum deflection of top of tower, 16 in. Maximum concrete stress at base, 1,400 psi. Each tower contains 12,700 cu yd of concrete and 1,920 tons of steel consisting mostly of 2-in.-dia bars.

Cables: Made up of fifty-six 3-in. strands arranged in the form of a 24-in. hexagon. Each strand, continuous from anchorage to anchorage, contains 169 wires of 0.188 in. dia. (In the side spans where the cable slopes and therefore the pull is greater four supplementary strands are added to keep the unit stress within the allowable value of 71,000 psi.) Main span cable sag is 222 ft. Cables are attached to the top chord of the stiffening trusses at mid-span for wind resistance.

Stiffening Trusses: Continuous through the towers and hinged at left anchorage, they are 20 ft deep and spaced 52.5 ft apart. Joined at top by 63-in. deep floorbeams on 35-ft centers and at bottom by a diagonal system of windbracing.

Deck: Accommodates a 41-ft roadway and two 4-ft, 6-in. sidewalks. Seven lines of stringers carry a 2-in. steel plate on which is placed a 32-in. concrete slab surfaced with 1½ in. of asphalt.

Wind Design: Objective was to obtain as much difference as possible between the fundamental natural frequencies of oscillation in bending and in torsion. By connecting cables to the stiffening trusses at mid-span, a frequency of oscillation in bending of 15 cycles per second was obtained, as shown by wind tunnel tests on a 1:100 model. By making the deck assembly—stiffening trusses, floorbeams and bracing—a rigid box structure, the frequency of oscillation in torsion was shown to be 62 cycles per second. It was determined that the critical-wind velocity, corresponding to a coupling of these natural frequencies in bending and torsion, is 450 mph, four times the largest velocity of record at the site.



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Cored-slab, cast-in-place bridge deck
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An interesting example of economical and practical bridge design is the new reinforced concrete bridge carrying five tracks of the Santa Fe Railroad over Paramount Boulevard in Los Angeles. The bridge is a two-span, cored-slab, rigid frame structure of reinforced concrete on pile foundations.

Los Angeles Highway Engineers have used this method of construction for many bridge structures. It has proved to be more economical not only because of the ready availability of materials but also because the cored slabs in the reinforced concrete bridge deck reduce dead weight in the completed structure.

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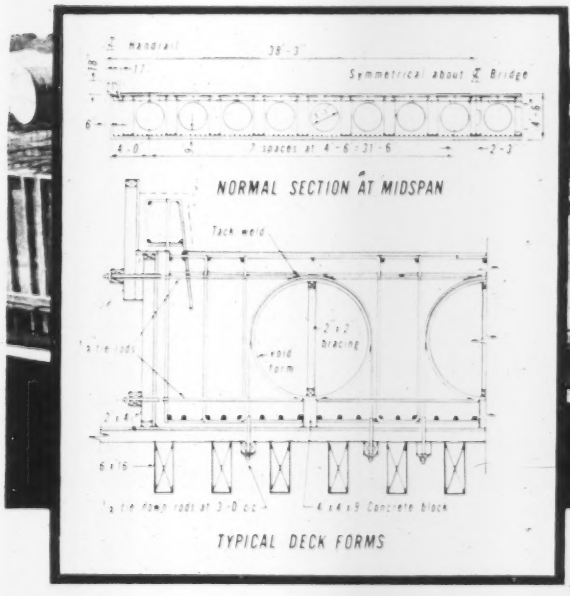
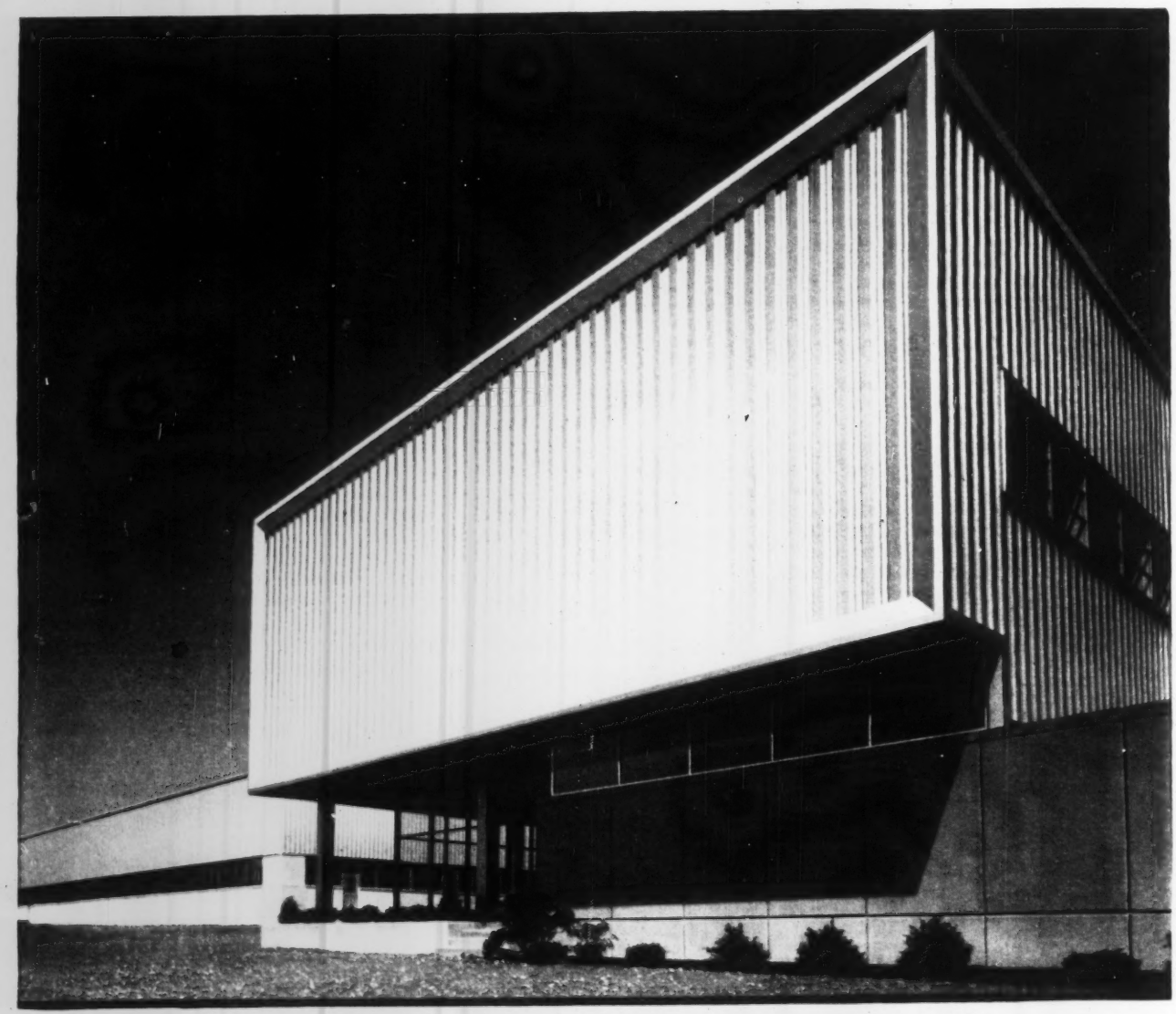


Construction detail of bridge deck forms, reinforcing bars, and void tie-downs.

Santa Fe Railroad Bridge over Paramount Boulevard, Los Angeles, California.
Designer: County of Los Angeles Road Department, Bridge Division.
Contractor: Otis B. Pierson Construction Company.

Mahon METAL CURTAIN WALLS



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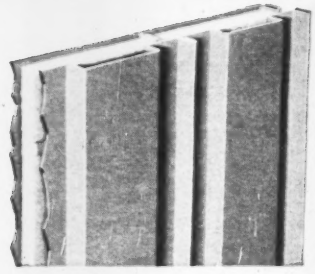

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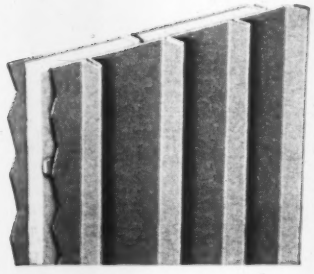

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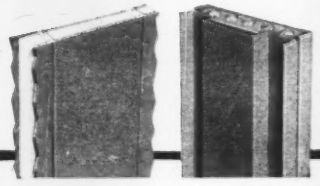

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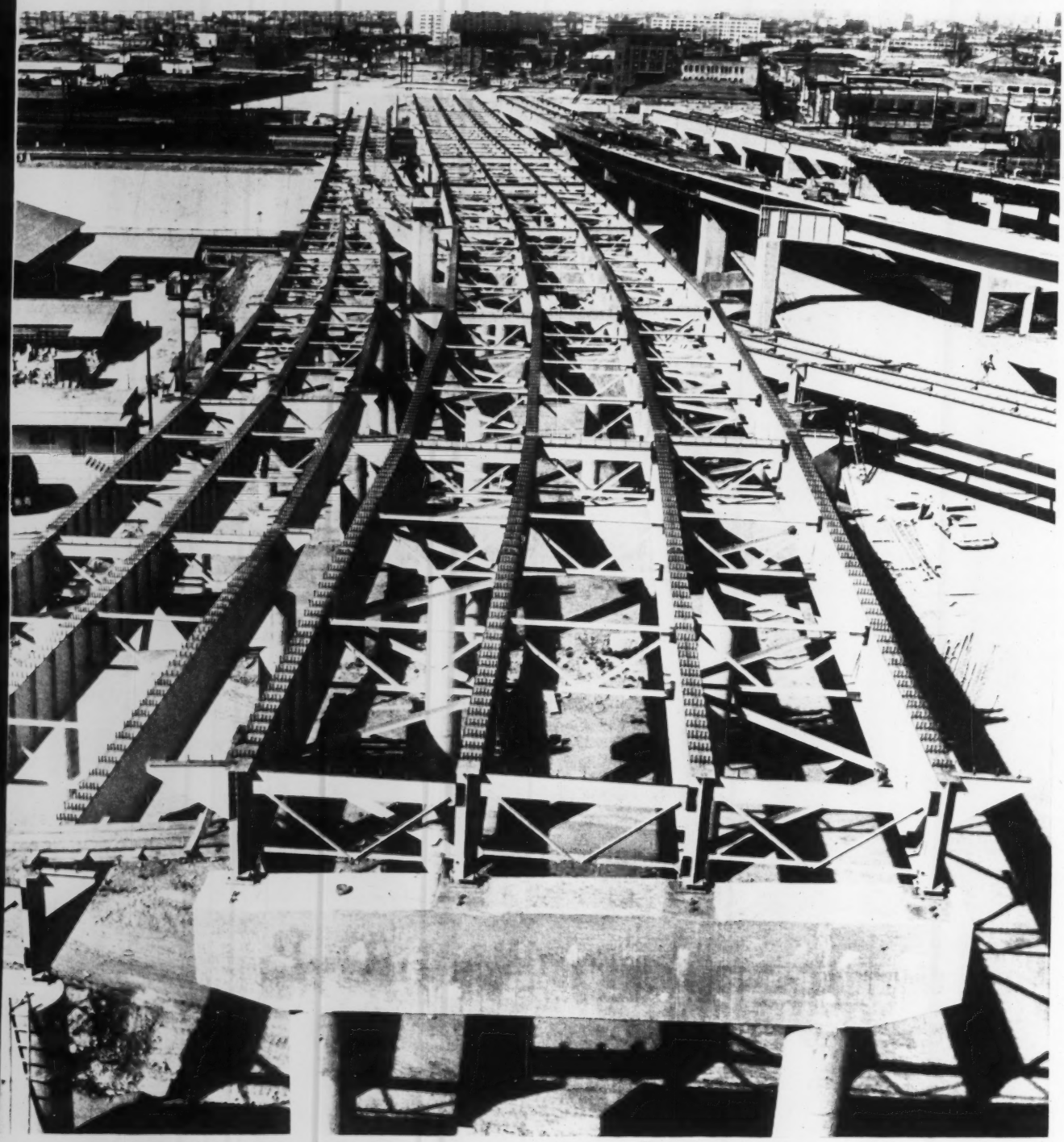
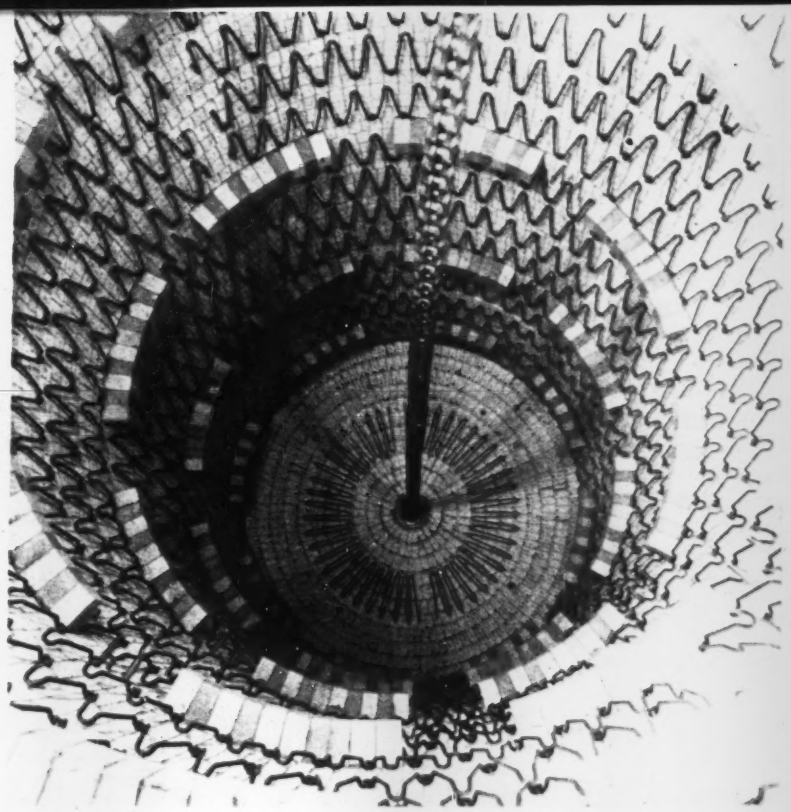
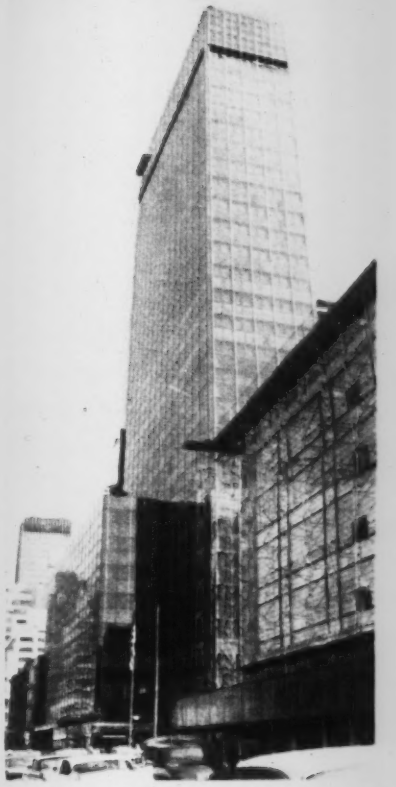


In California, almost 5,500 tons of steel is in place as structural work nears completion on the Santa Monica Freeway Bridge over the Los Angeles River. The bridge is 1,200 ft long, will handle 14 lanes of traffic, and contains an interchange within its components. The project will cost $31¼ million. It's scheduled for completion late this year.

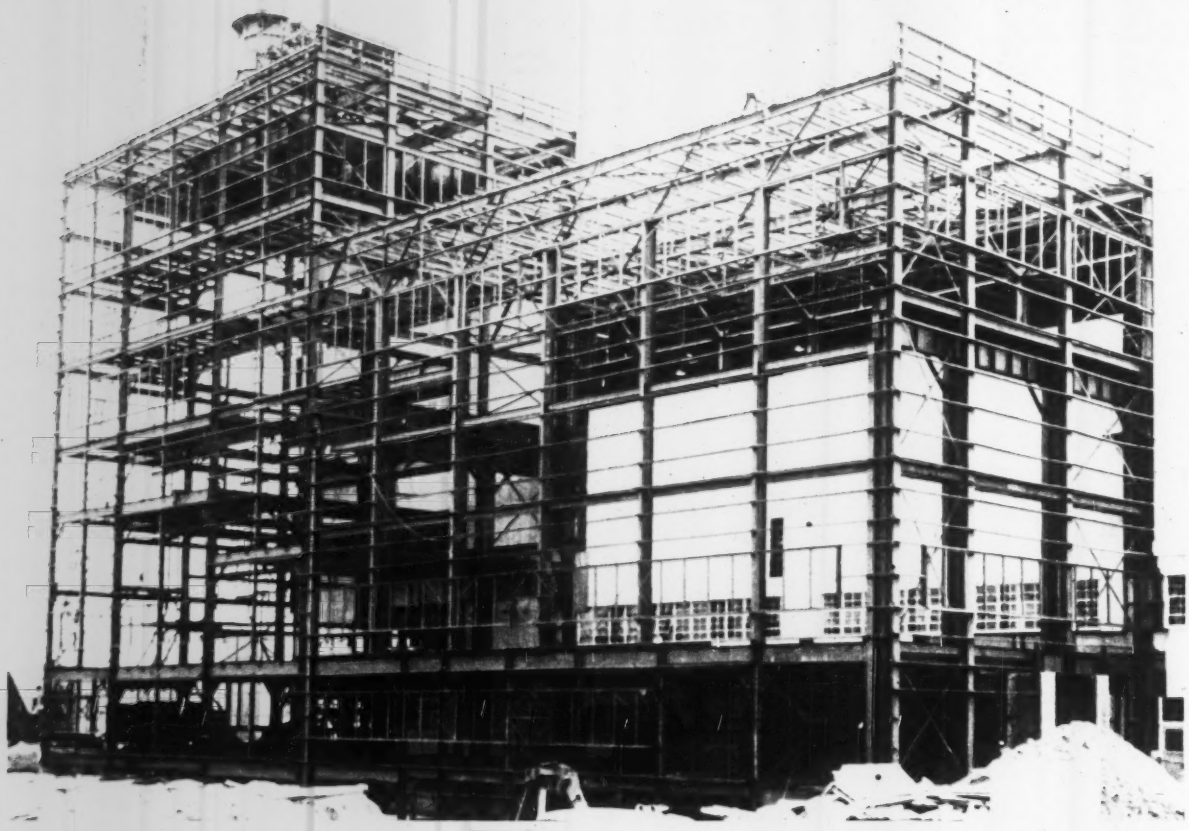


In Chicago, you're looking up, not down, into an oversize hardening furnace. It's large enough to handle rocket motor cases for Minuteman ICBMs. That chain hoists work loads into the core from below. The 7 x 25-ft-high furnace rides back and forth on rails over a series of loading, quenching and washing tanks. Lindberg Engineering Co. of Chicago built the $775,000 project for Lindberg Steel Treating Co.



On New York's Fifth Avenue, Corning Glass Works' headquarters rises 28 stories from a corner plaza. Harrison & Abramovitz & Abbe are the architects; George A. Fuller Co. is the builder.

In Florida, the southern section of the $100-million Jacksonville Expressway opened to traffic last week. Included in the section is this braiding system that connects three bridges. In clearing the right-of-way for the new road, the Jacksonville Expressway Authority purchased more than $20 million worth of property and demolished more than 3,000 buildings.



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INGALLS fabricated structural steel is again rising above Mississippi's City of Gulfport, promising an additional source of electrical power for the growing Gulf Coast.

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*1550 tons of INGALLS fabricated structural steel, platework and stack are included in the new Gulfport Plant, which will be a 100,000 horsepower generating plant between Gulfport and Biloxi on the Mississippi Coast.

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New Heating Plant Cuts Costs

High-temperature water system for Cincinnati hospital proves cheaper, more flexible, more efficient than steam

J. S. Blossom
Ziel Blossom & Associates
Cincinnati, Ohio

Cost studies made for the Children's Hospital, Cincinnati, show installation of a high-temperature water system is less expensive and more efficient than steam as a primary heat source.

Here's why:

- It has the lowest total annual owning and operating cost.
- It provides the greatest flexibility in any long-range corrective program for the heating system now in the building.
- Efficiencies can be maintained at a higher level with a hot water system because of the absence of scale, fouling or corrosion.

The heating survey was made after major faults were discovered in the existing boiler equipment of the 75-year-old institution last summer. A boiler rehabilitation program was then instituted.

Building heating loads were reviewed first, since many changes had taken place in the operation and function of hospital departments in the past 50 years. The load analysis indicated that a heating system of 25 million Btu per hour should be provided, including standby capacity. This made allowance for certain known increases in load that were planned for the future.

• Factors studied—Advances in recent years in the use of high-temperature water indicated the advisability of an engineering study and cost analysis for this newer type of heating system as well as for steam.

Comparisons were made between the two systems' annual owning and operating cost, their relative efficiencies and maintenance requirements.

Another important factor in this study was the immediate replacement requirements of the heating distribution system in various areas of the buildings. Two areas had not returned condensate to the boiler plant for many years. The age of the condensate piping and the physical evidence of the exposed piping indicated that trouble would increase in the future.

It was therefore decided that a new heating system should facilitate replacement, alteration or repair in any given area of the building with a minimum of interference with both the new installation and the operation of the existing system.

• High-temperature water system—This system generates water at 454F in a 600-psig design system using nitrogen for pressurization. All high-temperature water (HTW) is circulated through a water-to-steam converter, which supplies steam from the converter in the boiler room to all present process and heating loads. (In this system the HTW is not used directly except in the air-conditioning system for a building addition. The addition is now under construction.)

The HTW cycles were compared using both LaMont forced-circulation generators and package "vapor generator" units. Drum-type hot-water generators were not considered in this system, since the cycle was nitrogen pressurized rather than steam pressurized, and a high temperature drop was taken across the hot-water generator.

The schematic drawing (see p. 54) shows the general arrangement of this system. The water flows from the pump discharge through the three generators in parallel. Then it either goes through the converter (boiler) heat exchanger tubes, or bypasses the converter, according to the position of the control valve, and returns to the pumps.

The compression tank contains nitrogen charged from standard 2,000-psig, 44-cu ft nitrogen bottles and "floats" on the system by means of a 2-in. balance line connected to the suction side of the pumps.

The steam cycle incorporates a condensate receiver that collects all steam condensate returned from the various buildings. Condensate is discharged from the condensate-return pumps into the present deaerating feedwater heater. Deaerated water is then pumped by the boiler-feed pumps into the converter to complete the steam cycle.

• Replacement steam system—This system operating at 125 psig and discharging into the present steam main was compared with the high temperature water systems.

This steam cycle differs from the preceding water cycle in two respects.

- Boilers replace the converter. In the case of water tube or Scotch Marine boilers, three units were used. In the case of vapor steam generators, five units were used.
- A new deaerating feedwater heater was required in the steam cycle, because of the air-conditioning system for the addition to the Research Building. This would increase the total heating load in the system by 20%.

In the first system, the present deaerating feedwater heater could carry the present loads with some modification and rebuilding, and the new Research Building load would be added directly to the hot-water cycle. For a new steam system, the existing deaerating feedwater heater could not be modified to carry to total load.

In both systems, natural gas is used as fuel, with a 10,000-gal oil storage tank as a standby facility. The burners are combination gas-oil set up to burn No. 5 oil in the future. During the period when fuel oil is a standby facility only, No. 2 oil would be used. This installation is subject to interruption of its gas supply by the local utility under certain stipulated load situations.

The Children's Hospital occupied its present three buildings in 1926. At that time, three 150-hp, 125-psig boilers were placed in operation supplying high-pressure steam to the sterilizers, laundry and kitchen equipment and low-pressure steam to cast iron radiators and air-heating coils.

Construction of the high-temperature water system is now underway. Two of the present boilers have been removed and the new generators, pumps, compressor, and the compression tank have been set in place.

The new equipment will take over the steam load after it is tied and is operating efficiently. Then the third remaining boiler will be removed.

The Main Hospital Building has about 180 beds, together with the usual auxiliary service, administrative areas and operating room suites. This building is five stories high and contains about 125,000 sq ft of floor space. The Research Building is L shaped, four stories high, contains 63,700 sq ft of floor area and is used for research laboratories and out-patient clinic. Vincent Hall, the nurses residence, is a separate three-story structure containing 38,800 sq ft of floor area.

Architectural and engineering consultants for the work are Potter, Tyler, Martin & Roth, architects, and Ziel Blossom & Associates, engineers, both of Cincinnati.

(Turn the page)

4-D

WROUGHT IRON IN WATER AND SEWAGE PLANTS stymies corrosion

WHERE TO USE IT:

- gas lines
- heat exchanger tubes
- digestor heating coils
- raw sewage lines
- sludge lines
- compressed air lines
- guard railings
- electrical conduit
- chlorine lines
- ammonia lines
- outfall lines
- boiler piping
- weir plates and baffle plates
- smokestacks
- sludge tanks
- manhole ladder steps
- storm sewer buckets
- soil, waste, vent and downspout lines
- hot and cold water piping

Write for technical data on specific applications

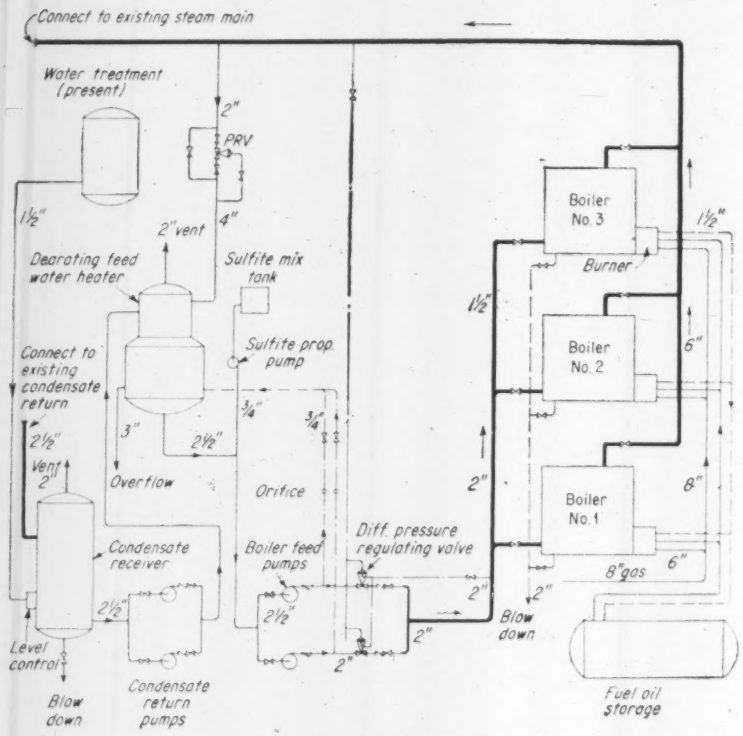
BYERS 4-D WROUGHT IRON

Tubular and Flat Rolled Products

A. M. Byers Co., Pittsburgh 22, Pa.

Story begins on page 53

Here's How They Compare . . .



Steam Heating System

• Generator or Boiler Construction

High-Temperature Water—Tangent water-tube construction with integral refractory, no steam drums or steam spaces, no water-level control required.

Steam—Can be water-tube and drum type or Scotch-Marine depending upon selection of boilers with necessary steam accessories and trim devices, relatively critical water-level control.

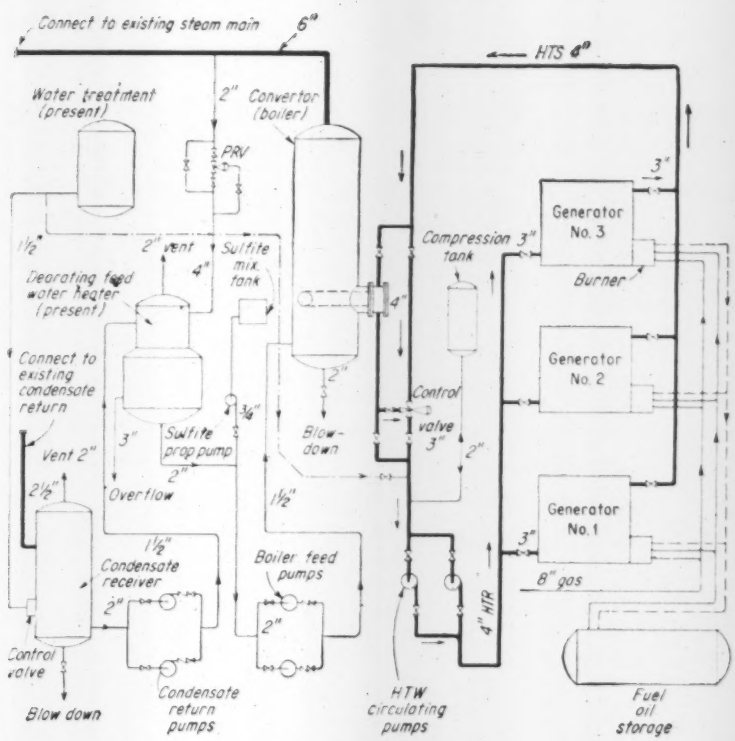
• Internal Corrosion

High-Temperature Water—This sealed system contains a fixed water charge and fixed nitrogen charge. This is a neutral non-corrosive atmosphere. Water treatment is required only for the initial fill. No blowdown is required. Internal scale does not build up. Initial start up boils off oxygen and other dissolved gases creating a neutral solution in the system. Efficient heat transfer is maintained throughout life of system since internal surfaces stay clean and free of scale.

Steam—Good-quality water treatment is necessary to minimize corrosion. Scaling of tubes and surfaces occurs. Blowdown is required to minimize solids build up. Corrosion occurs at a rate depending upon quality of boiler water and maintenance. While corrosion can be greatly retarded, it is not eliminated. Heat transfer is gradually reduced throughout the life of the system as scale and corrosion deposits form.

• Flexibility for Future System Alterations

High-Temperature Water—This cycle provides an expedient means of rebuilding the existing steam system as it is renovated. New loads can be added using smaller piping with longer life expectancy. Large-scale deposits and extensive corrosion existing in the present systems is not transferred to the new system since the tendency would be to reduce the steam load and transfer the heating load to the hot-water cycle.



High-Temperature Water System

Steam—The renovation or repair of the existing steam distribution system is awkward and complicated since both steam generation and distribution must be maintained during reconstruction. New loads must be added by the installation of steam mains paralleling the existing, or by replacing the present mains with larger new mains. Life of the steam-condensate return system is less than that of the hot-water system. Care must be taken to prevent the existing corroded system from contaminating the new steam equipment and reducing its life expectancy.

• Cost Analysis

The cost analysis of the two basic systems described included several variations of each system using different types of primary heat generators or boilers. These cost estimates were based on actual quotations on all major equipment. Complete labor and material installation take-offs were made for all components of the system.

High-Temperature Water—The lowest annual cost was computed for three water-tube LaMont-type generators, each having a capacity of 8.68 million Btu per hr. This system has an initial installed cost of $126,000. The "annual owning and operating cost" for this system would be $49,000. This includes fixed costs for depreciation, interest, taxes and insurance; operating costs for fuel, electricity and treating water; and maintenance costs for labor and material.

Steam—A comparable system with water-tube package steam boilers has a first cost of $140,200. Its annual owning and operating cost would be $50,700. A system with five package vapor steam generators has a first cost of $117,400. The annual owning and operating cost of this system would be $54,700. A system with three package Scotch-Marine-type generators has a first cost of $113,000. The total annual owning and operating cost for this system would be $49,300.

4-D

WROUGHT IRON CONDUIT delivers low-cost uninterrupted service

WHERE TO USE IT:
- direct burial in earth
- burial in concrete
- submarine cables
- offshore platforms
- bridge structures
- industrial plants

HERE'S WHY:
- optimum corrosion resistance
- no internal flaking or clogging
- impact resistance
- easy fabrication
- UL approved
- sherardized, MVC-1 coating
- black or hot dip galvanized finish
- all pipe sizes available
- long random lengths available
- fewer joints necessary
- black or galvanized threads

Write for technical data on specific applications

BYERS 4-D WROUGHT IRON

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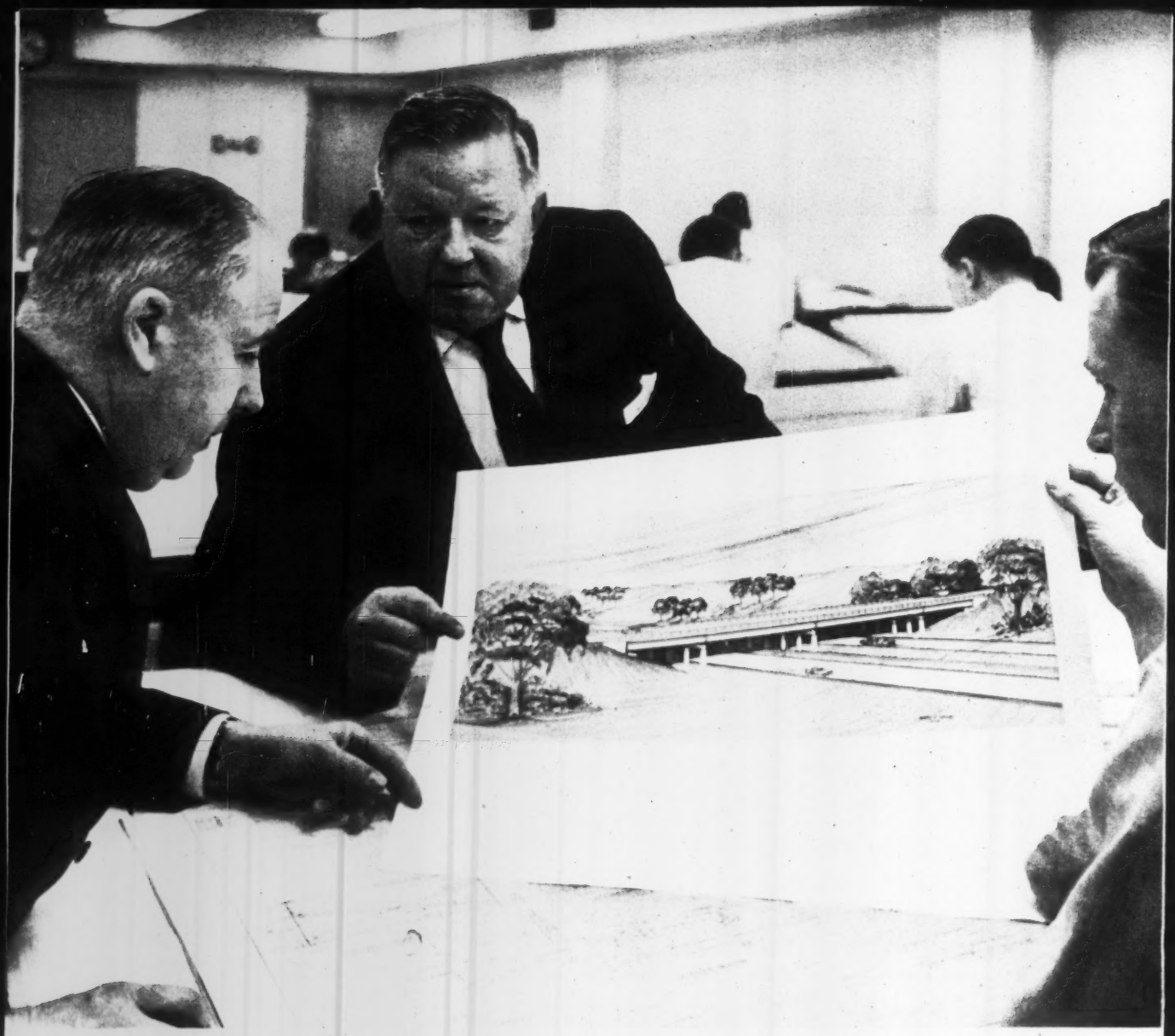
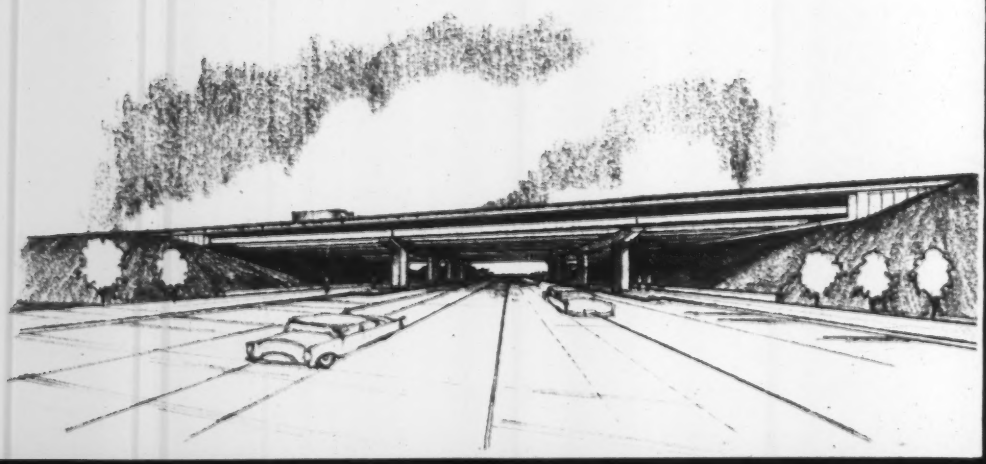


Mr. C. H. Darby, Mr. O. J. Porter and Mr. W. F. Leivonen, Jr. discuss a problem involving the Burr Oak Avenue bridge on the Illinois Toll Highway.

Typical composite welded girder twin bridges carrying 8 lanes of Interstate Highway traffic over wide street in Salt Lake City.



Bronson Road overpass on Connecticut Turnpike. Steel can be welded, flame-cut, riveted, bolted. It's versatile and available.

Winning a coveted War Department award. Presented to Mr. O. J. Porter for discovery of a new method of compaction and stabilization of subgrades enabling airfield runways to be built to support very heavy airplanes.

50 steel bridges now being designed for Salt Lake City Interstate Highway

by Porter, Urquhart, McCreary & O'Brien, Consulting Engineers.

Steel bridges for some of the important highways in the country have been designed by the firm of Porter, Urquhart, McCreary & O'Brien. These include bridges on the New Jersey, Ohio, Connecticut, New Jersey Garden State and Illinois Toll Roads. Their big job at present covers seven miles of the Utah Interstate Highway which cuts through Salt Lake City and includes 50 steel bridges of composite welded girder construction. The highway will provide six and eight lanes of traffic, but allows space for eight and twelve lanes, eventually.

Steel goes up in hours!

According to Mr. O. J. Porter, Managing Partner, a large proportion of the firm's present work is in highway construction, including viaducts and overpasses. Both minimum cost and speed in opening the way to traffic are important considerations. Due to the ease of transporting fabricated short steel spans to urban bridge sites, erection is accomplished in a matter of hours, minimizing detours and tie-ups in traffic. Traffic hazards are substantially reduced by eliminating falsework. Furthermore, headroom may be increased in tight places through steel's high tensional strength qualities.

Steel adds beauty. By using steel, designs may be executed which actually add to the beauty and dignity of an urban neighborhood. This is an important consideration which should always be kept in mind.

Steel reduces costs. Frequently, the lighter construction possible with steel, reduced foundation costs and faster erection saves labor. New, tougher, high-strength and alloy steels provide greater strength with less bulk.

Increased facilities. There is an ever-expanding demand for steel because of its many advantages in the fast-growing market for bridge construction. The steel industry has had the foresight to grow with this vigorous market through greatly expanded facilities for manufacture of structural shapes and plates. You can confidently design in steel—the material you know best, the material that offers most—knowing it will be available.

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United States Steel Corporation—Pittsburgh
Columbia-Geneva Steel—San Francisco
Tennessee Coal & Iron—Fairfield, Alabama
United States Steel Supply—Steel Service Centers
United States Steel Export Company

United States Steel

MONOTUBE PILE DATA

TYPE PILE—YN 12″

AVERAGE LENGTH—40 feet

MAXIMUM HEAD ROOM—11 feet

DRIVEN LENGTH INCREMENT—5 feet

HAMMER—McKiernan—Terry No. 7

NUMBER OF PILES—20

INSTALLATION TIME—4½ working days

ADAPTABILITY plus ECONOMY with Monotube piles . . . ideal for underpinning projects where conditions are difficult, and rapid job completion is important. Monotubes are easily cut to required lengths, easily handled, easily assembled and easily driven despite low head room.

Tapered, fluted Monotube piles are available in lengths, diameters and gauges to meet every requirement. Write The Union Metal Manufacturing Co., Canton 5, Ohio for complete information.

UNION METAL

Monotube Foundation Piles

Falsework and trestle extending into the water at Long Beach, Calif., are the start of a . . .

. . . Navy small boat landing and parking area that will look like this when completed.

Prestressed Sheetpiles Enclose Jetties

William P. Remington
Consulting Engineer
Long Beach, Calif.

A new Navy landing in Long Beach, Calif., uses prestressed concrete sheetpiles to form protective jetties. The facility provides twenty floating berths for fleet shore boats, with additional space for officer launches. It is located adjacent to downtown Long Beach with ample vehicle parking space.

Selection of a prestressed sheetpile design was based on the following:

- High resistance to bending.
- Attractive appearance.
- Resistance to deterioration in sea water.
- Over-all economy.

One jetty—the easterly—is 715 ft long; the other is 190 ft. A total of 1,050 sheetpiles was required, each 30 ft long and 16x36 in. in section.

The piles are pretensioned with 22 strands of ⅜ in. nominal section. There are 14 strands on the water side, seven strands on the fill side and one strand reinforces the tongue of the tongue-and-groove sheets. All strands have 2-in. clear concrete cover. Initial prestress is 14,000 lb per strand with allowance in the design for 20% loss due to creep and shrinkage.

A major design consideration is concerned with the Long Beach subsidence problem. Although this subsidence is

4-D

WROUGHT IRON PIPE
SOIL, WASTE, VENTS
AND DOWNSPOUTS
cuts maintenance/
installation costs

HERE'S WHY:

- optimum corrosion resistance
- needs no protective coating
- meets building code requirements
- resists shock and vibration
- saves space as Durham system
- long random lengths available
- fewer joints required
- fewer hangers needed
- less labor expended
- leak-proof sanitary joints
- no internal flaking, clogging
- low cost per year of service

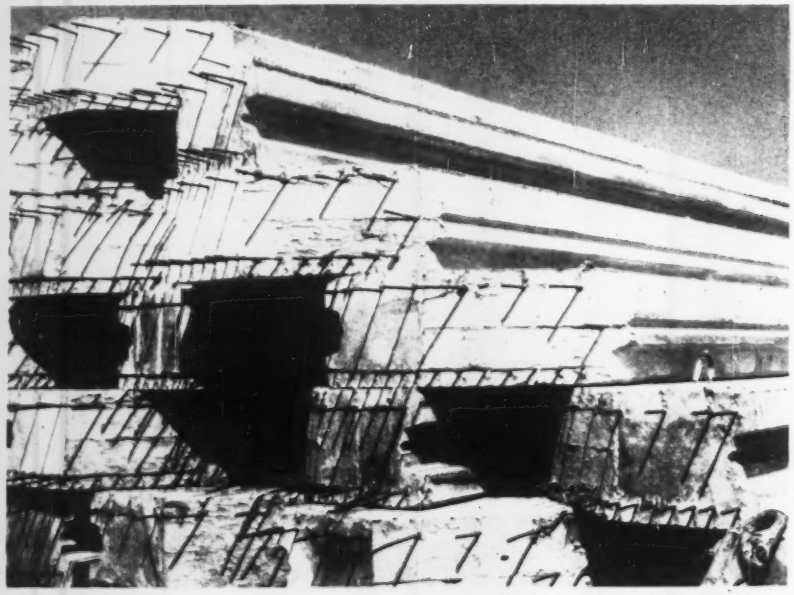
Write for technical data on specific applications

BYERS 4-D WROUGHT IRON

Tubular and Flat Rolled Products

A. M. Byers Co., Pittsburgh 22, Pa.

FLOATING RIG prepares to set a prestressed sheetpile against falsework.



SHEETPILES have seven ½-in. strands on land side, 14 strands on water side.

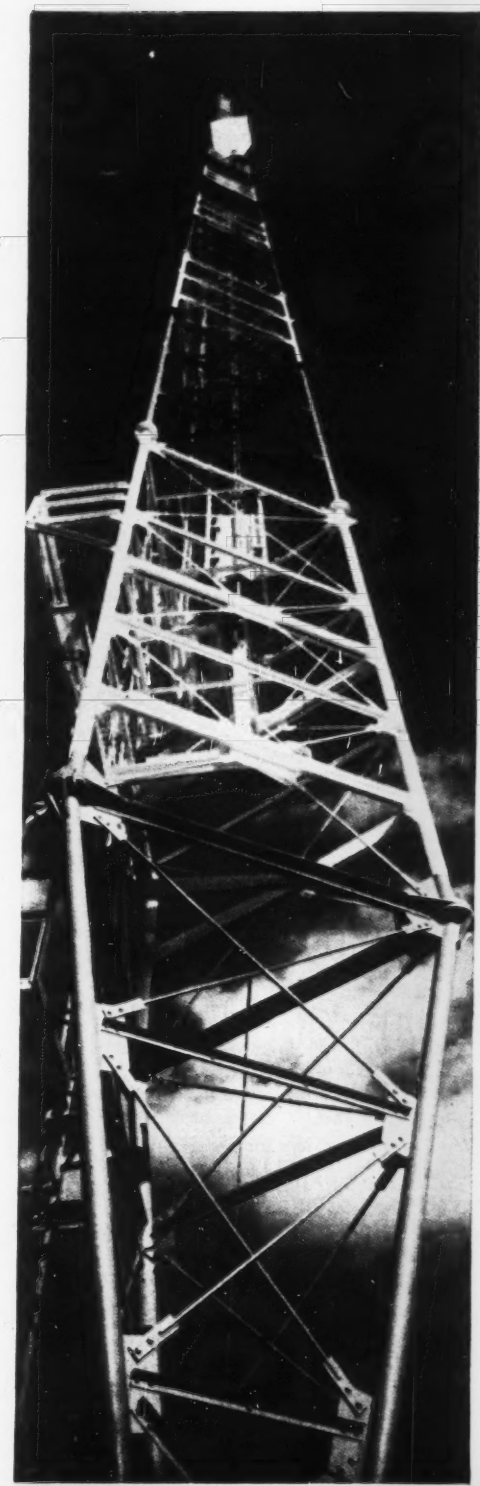
now under gradual control by repressurization, the jetties were designed for additional heightening at a future date. The jetties are being constructed initially to El. 17 above MLLW (mean low low water). Remedial additional construction is contemplated after 5 ft or more of further subsidence has occurred. Allowance is made to extend the jetties upward 9 ft by adding cast-in-place reinforced concrete walls.

Selection of an unbalanced pretensioned beam design for the prestressed sheetpile prepares for remedial construction more economically and also permits the sand fill between sheetpile walls to be made hydraulically. This is a considerable saving, compared with placing a dry backfill.

Maximum moments under the two different loadings were computed to be nearly equal—about 42,000 ft-lb per lin ft of wall. This required an unbalanced pretensioned, 16-in.-thick pile.

Because of the corrosive properties of seawater, the sheetpiles were designed with a safety factor at the cracking point rather than considering the ultimate

TALLER THAN THE EMPIRE STATE BUILDING

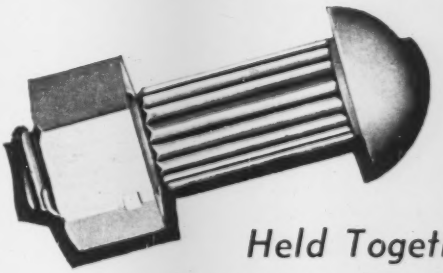


WIS-TV . . . Columbia, South Carolina

. . . EASTERN AMERICA'S

TALLEST

TV TOWER



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STRUCTURAL RIB BOLTS®

And **ANCO LOCK NUTS**

The new WIS–TV Tower, near the capitol city of Columbia, South Carolina . . . designed, fabricated and erected by Kline Iron and Steel Company . . . is added to the long list of structures for which Structural Rib Bolts and ANCO Lock Nuts were selected for reasons of speed, strength, safety advantages and lower costs.

This new Tower, fourth tallest structure in the world, reaches upward to a height of 1,526 feet . . . weighs more than 1,000,000 pounds . . . is designed to withstand winds up to 145 miles per hour . . . and is equipped with a 2-man elevator which rises 125 feet per minute to the 1,360-foot level.

More and more towers of all types . . . radar, television, radio, hi-tension . . . are being constructed with Structural Rib Bolts and ANCO Lock Nuts. They make any job easier and faster. So easy, in fact, that one man with a maul and wrench can install them.

As for strength, actual tests show a $\frac{5}{8}$" dia. Structural Rib Bolt to be stronger than a $\frac{3}{4}$" dia. rivet. Shear and bearing values are equal to hot driven rivets. So it's small wonder that they are approved for all types of Federal, State and private projects.

Structural Rib Bolts and ANCO Lock Nuts are furnished black or galvanized to meet your requirements.

Write today for samples, complete technical information and prices without any obligation.

Designed, Fabricated And Erected by KLINE IRON AND STEEL COMPANY Columbia, South Carolina

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So next time you order, ask for pencil and ink drafting films of "Mylar". . . *safeguard your investment* in drafting time and labor.

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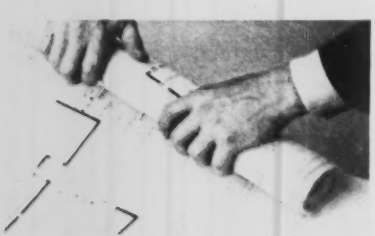
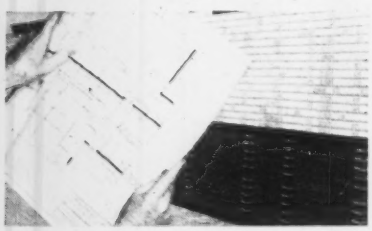


"Mylar" provides extra protection against tearing . . . has good fold endurance.



"Mylar" resists aging and deterioration . . . safeguards your investments.

DU PONT

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BETTER THINGS FOR BETTER LIVING . . . THROUGH CHEMISTRY

DU PONT **MYLAR**® POLYESTER FILM

strength for a design criteria. This conservative concept insures that seawater cannot penetrate through cracks.

Low water-cement ratio of the concrete is a further safeguard against deterioration. Specifications require 7½ sacks per cu yd of Type II cement with water at not more than 5½ gal per sack. Concrete strength of 3,500 psi before transfer of prestress is also required.

The contractor, Guy F. Atkinson Co., Inc., scheduled production to reuse the pretensioning bed every 24 hours. To attain the necessary concrete strength, the contractor's mix design included only 4.2 gal per sack.

The economy of reusing a prestressing bed every day is obvious. Good production techniques and quality controlled concrete are needed to meet this production rate. Steam curing at temperatures up to 160 F was also used. But steam curing was not employed after transfer of prestress. Most of the concrete exceeded 6,000 psi 28-day strength with 5,000 psi required.

Piles were cast in metal forms with the waterside down. This procedure insures a dense surface to resist water and produces a uniform texture. This adds much to the appearance of the piles, compared to ordinary precast piles cast one upon the other.

Other advantages of casting piles with the waterside down are ease of handling and lower position of the center of gravity of prestress. This reduces the moment arm in the end abutments of the prestressing bed with a consequent reduction in abutment size and a saving in the cost of the pretensioning bed. And it permits pickup at either end of the pile for removal from the form and general handling. This would not be possible if the waterside were up, since the pile might fail under its own dead load.

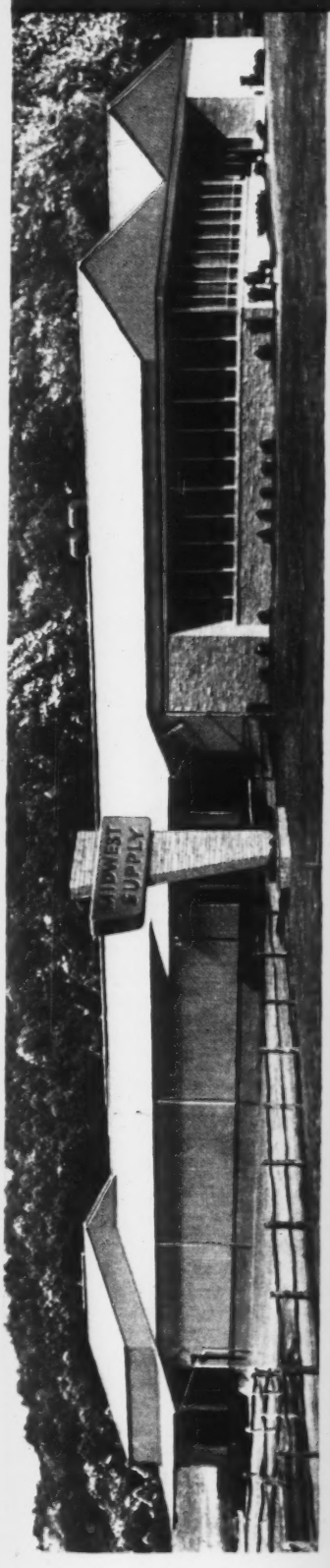
In deeper water, hydraulic sand fill was built up to El. 8 before installing the jetties. This permitted a uniform length of 30 ft and it reduced the quantity of outside rock protection. Rock amounted to a 6-ft layer of 6-in. quarry run protected by a 5-ft layer of 5- to 6-ton armor rock.

Piles were jetted and driven 6 ft into the sand. A finished grade was established for placing purposes. The jetties are designed to resist a 6-ft wave.

The tongue and groove joints have a 1½-in.-dia grout hole. And the entire length of the joint is pressure grouted using a 1 to 3 cement-sand grout. The pile walls are topped by a cast-in-place coping, 34 in. wide by 27 in. deep.

George E. Nicholson was consulting engineer. Much of the design detail was accomplished by Long Beach city engineer Jess D. Gilkerson and his staff.

STRAN-STEEL BUILDINGS—NOW IN COLORS!



Stran-Steel Rigid Frame structures have no interior columns. From wall-to-wall and ceiling-to-floor their wide open interiors are 100% usable.

MODERN PLANT CONSTRUCTION AT ITS FINEST

Fashionable as well as functional, these all-steel buildings are available in six rich Stran-Satin Colors: blue, bronze, green, gray, rose and white. Factory-applied Stran-Satin Color coatings of vinyl-aluminum are baked on over zinc-coated steel. Stran-Steel's rugged construction assures you of today's best all-around buy in industrial and commercial buildings. You specify the size and layout you want—custom-tailoring is a specialty with Stran-Steel. Only 25% initial investment and five years to pay on Stran-Steel's purchase plan. For full details, mail coupon or contact your Stran-Steel dealer. He's listed in the Yellow Pages under *Steel Buildings* or *Buildings—Steel.*

LOW-COST STRAN-MASTER: The fireproof Stran-Master, lowest cost all-steel building, is also available in Stran-Satin Colors. Yours for only a few hundred dollars down.

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Please send data on Stran-Satin Color and complete literature on industrial buildings.

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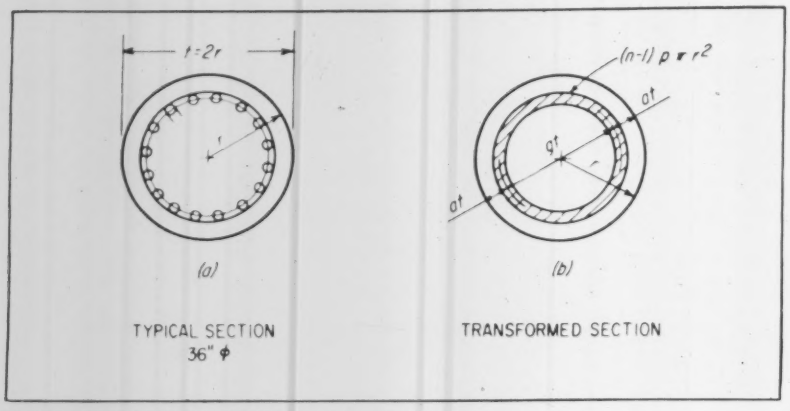
Column Design Speeded With

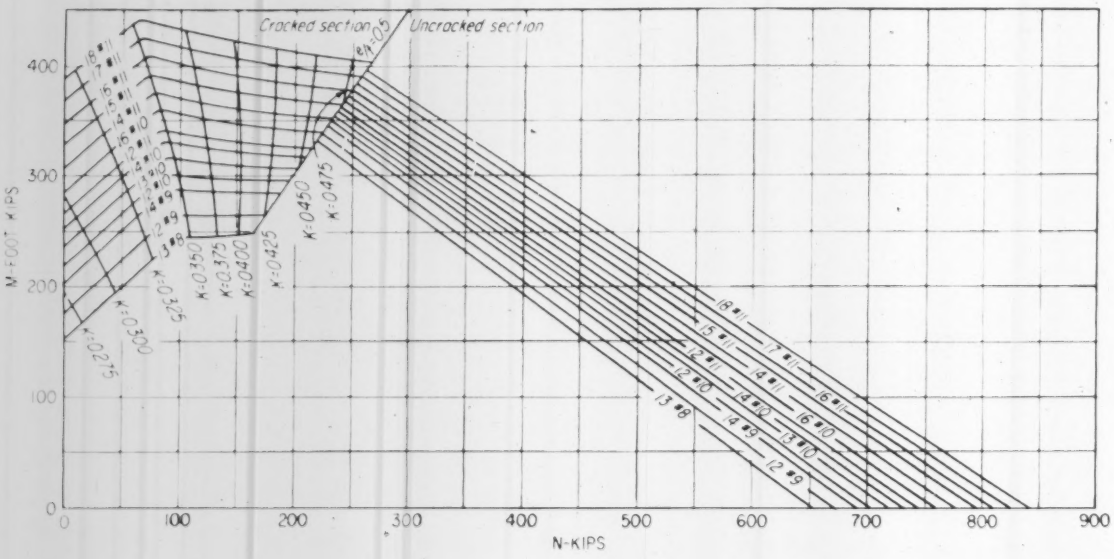
Peter T. Gavaris
Partner
King & Gavaris
New York, N. Y.



THESE COLUMN SECTIONS were basis of design by computer.

The design of eccentrically loaded, circular, reinforced concrete columns has been speeded by the use of moment-load charts prepared from calculations made with a high-speed electronic computer.

Determinations of column dimensions and bar sizes can be made swiftly from these charts, eliminating lengthy, time-consuming computations. This experience indicates that savings can be made by using computers to develop design charts for many types of mem-



DESIGN CHART for 36-in.-dia. reinforced concrete column was developed from calculations made with high-speed computer.

0+070300'36'16'10'-0000000"

N (kips)	M (ft. kips)	k	e/t	fc (psi)	fs' (psi)	fs (psi)
0630	0094	01.749837	00.050000	00735	06982	03512
0536	0161	01.124817	00.100000	00804	07415	01512
0466	0210	00.916573	00.150000	00855	07735	00031
0413	0248	00.812401	00.200000	00894	07982	-01109
0370	0278	00.749922	00.250000	00925	08178	-02012
0336	0302	00.708267	00.300000	00951	08338	-02750
0307	0322	00.678548	00.350000	00972	08470	-03359
0283	0340	00.656215	00.400000	00991	08594	-03879
0262	0354	00.638836	00.450000	01006	08688	-04316
0245	0367	00.624977	00.500000	01019	08770	-04695
0210	0341	00.450000	00.540263	01027	16000	-10570
0183	0343	00.425000	00.626175	01045	16000	-12000
0153	0347	00.400000	00.755278	01065	16000	-13664
0121	0352	00.375000	00.972813	01090	16000	-15637
0084	0359	00.350000	01.418878	01119	16000	-18000
0041	0322	00.325000	02.626636	00995	14566	-18000

COMPUTER PRODUCED column design data in this form, from which the design chart was plotted.

Computer

bers and structures. After a program has been prepared, the computer turns out needed data swiftly.

The computer program developed for these moment-load charts was made general enough to include all standard column sizes, different reinforcement arrangements and various code requirements. But only enough computations were made on the electronic computer to develop the charts for combinations actually used by the bridge-design section of the firm.

Included in the charts prepared is one covering the most frequently selected column size, the 36-in.-dia tied column.

The electronic computer calculated and printed out, for specified numbers and sizes of bars for selected columns, various combinations of moments and loads satisfying code requirements (e.g., the 1957 AASHO Standard Specification for Highway Bridges). An example of a computer's solution for a 36-in.-dia tied column reinforced with 16 No. 10 bars is given in a table. In it, N is the load; M the moment, f_c the concrete stress, and f_s' and f_s the steel stresses.

With such tabulations, a moment-load chart was compiled showing the relationship between moments due to eccentricity, direct loads and required reinforcement for various moment-load combinations.

As specified by the 1957 AASHO specifications, columns subject to an axial load combined with bending in one or both planes may be designed on the basis of an uncracked section, if the ratio of eccentricity to depth, e/t, is not greater than 0.5; and shall be designed on the basis of a cracked section if this ratio is greater than 0.5. As can be noted in the tabulation and in the chart, the computer program is capable of carrying out computations made on the basis of either cracked or uncracked sections.

Prior to this application of electronic computers, the time required for obtaining complete results of repetitive engineering computations for graphical representation or tabulation was too large. With the preparation, however, of a computer program as developed by King & Gavaris, time-saving design charts can be completed in a very short time.

The computer program utilized for the concrete column design charts was developed by V. Labutis, design engineer, King & Gavaris, under the supervision of the author. D. Carsen is chief engineer and C. Tung, chief program engineer.

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4-D

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- curb plates
- scuppers
- bridge decks
- service building piping
- pier protection
- lamp posts
- tie bars, dowels
- fasteners

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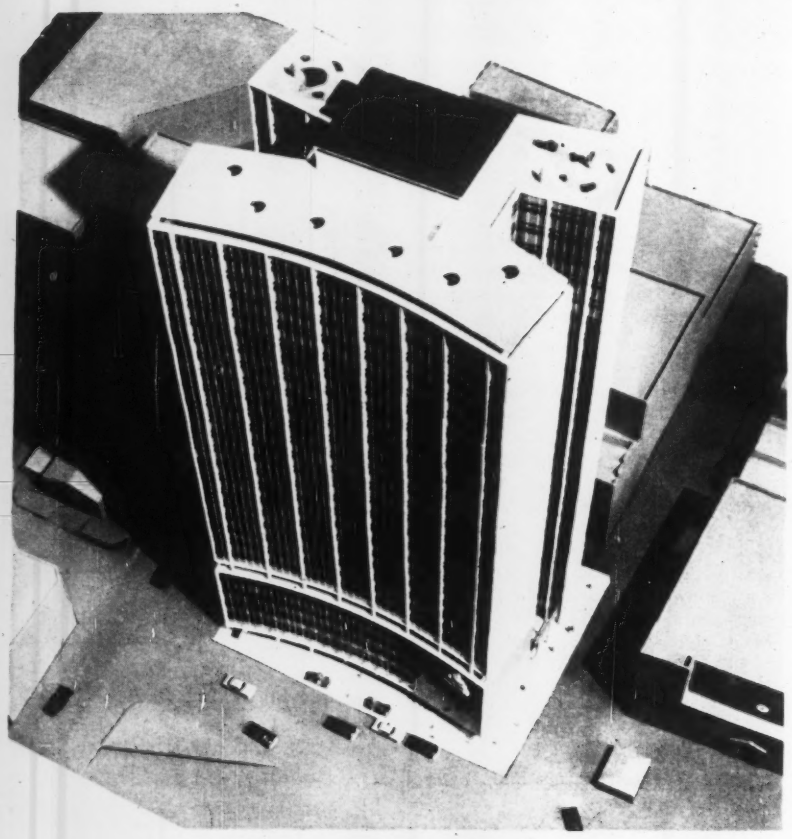
A. M. Byers Co., Pittsburgh 22, Pa.

International



New Shape Coming in Sydney

Australian builders have started work on a Sydney skyscraper—Australia's tallest. It's a 370-ft-high headquarters for the Australian Mutual Provident Society. The building is one of the first approved for construction there since Sydney removed its 150-ft building-height limit in 1957.

The building will be 26 stories high, in the shape of two crescents back-to-back. It will have an all-welded steel frame without interior columns; cellular steel for decking will be finished with 2½ in. of concrete topping. Concrete core walls will absorb lateral stresses.

Architects Peddle, Thorp & Walker of Sydney have designed the building to accommodate AMP's expansion needs for the next 40 years; plans call for 500,000 sq ft of floor space in the new headquarters. All building materials and construction methods are being tested in a two-story prototype of the office building with the object of reducing long-term maintenance expense as well as cost of construction.

There won't be a front or back to the building; one curved side looks out over Sydney Harbour, the other side faces the downtown business district. Architect Graham Thorp picked the shape for two reasons? It will be a prominent Sydney landmark, so a double face was important! The curved form is inherently stiffer than a flat one, and Thorp wanted to keep away from the usual slab-type of building.

Every part of the air-conditioned offices will have an outside view. An auditorium at ground level will seat 260 persons. Half the roof will be a garden, the other half a covered observation gallery.

Two floors are designed to carry 900 tons of calculator equipment. A separate air-conditioning system will serve these two floors.

Outside, the building's end walls will be marble or tile on 11-in.-thick masonry block. Double-glazed curtain walls will cover the curved faces.

Site demolition began this past winter. The $11.5 million project is scheduled for completion in 1961.

(*International* continued p. 71)

In New Construction or in Modernizing... the better value is

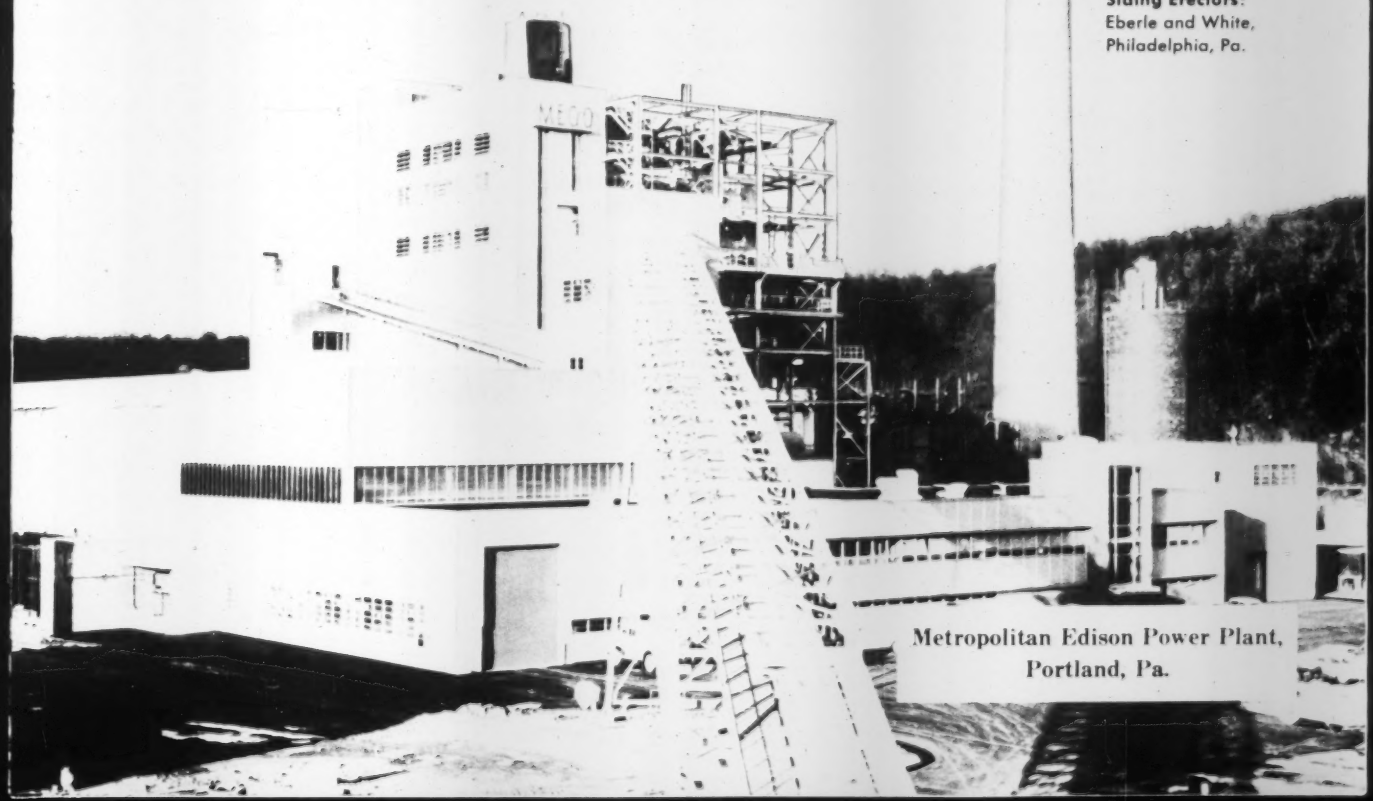
REYNOLDS ALUMINUM

Reynolds Field-Assembled Insulated Wall Panels were used in the building of this industrial plant. Economies were achieved in construction, the plant is good-looking—and it is virtually maintenance-free. Exterior walls are 8" Commercial Ribbed Embossed Siding; interior walls, Corrugated Commercial Siding. Aluminum did this job better.

Architects: Gilbert Associates, Reading, Pa.

General Contractor: Sessinghaus and Ostergaard, Erie, Pa.

Siding Erectors: Eberle and White, Philadelphia, Pa.



Metropolitan Edison Power Plant, Portland, Pa.

BEFORE

Here was an older building—structurally sound, but neither a joy to behold nor a modern asset in the community. This remarkable transformation was achieved quickly and economically by combining imaginative design with easily-available Reynolds Aluminum products—Clear Anodized 4″ Commercial Ribbed Siding for the vertical panels, Clear Anodized 8″ Commercial Ribbed Siding for the horizontal cap and Reynolds Aluminum Vertically Pivoted Windows. Result: Increased value and beauty, and much lower maintenance costs.

AFTER

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Lockwood Greene Engineers, Inc.
New York, N. Y.

General Contractor:
Hughes-Foulkrod Co.
Philadelphia, Pa.

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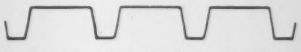

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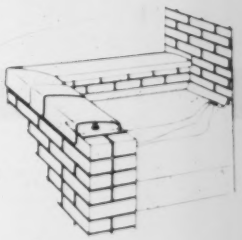

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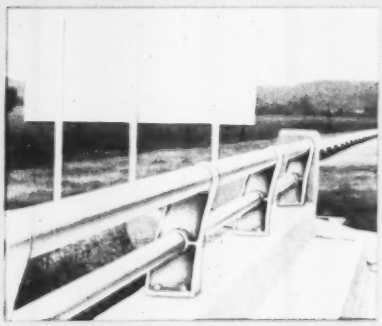
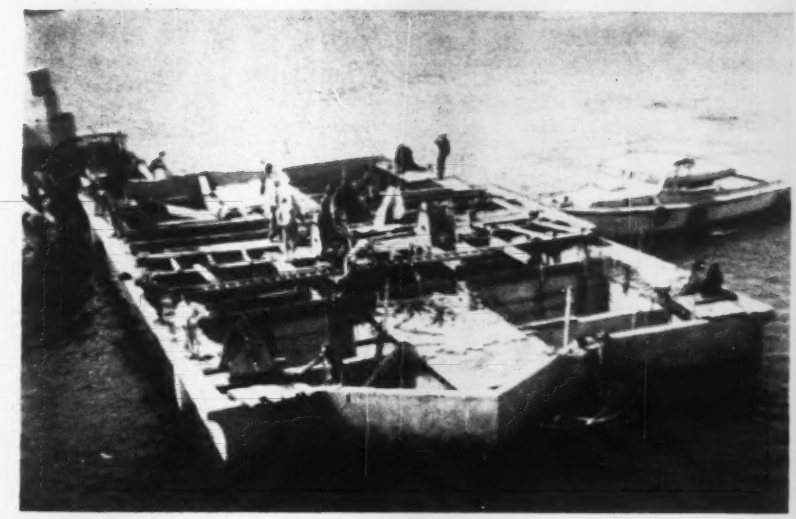


THE purpose of a guard rail is to slow down a speeding car—slow it down to a stop, not stop it with a crash. Actual impact tests on road installations prove that aluminum guard rail—in a gauge comparable to previous materials—fully meets these practical requirements.

Freedom from rust and resistance to corrosion—no painting or repainting—give aluminum a big advantage in guard rails, bridge railings, lighting standards, signs, chain link fencing and other highway construction items. For more information call the nearest Reynolds sales office, listed under "Aluminum" in classified phone books of principal cities. For literature, write Reynolds Metals Company, Richmond 18, Virginia.

Watch Reynolds TV show "Walt Disney Presents" Friday Nights on the ABC TV Network



Floating into position off Sydney, Australia, is . . .

Precast Pile Cap for a Bridge

Rather than put down a mid-river cofferdam in which to work, builders of the new Spit Bridge in Sydney, Australia, precast a prestressed headstock on shore and floated it into position to cap a cluster of four cylinder piles. This formed the pier for the main bascule span and its machinery.

The 16-ft-dia cylinders had been sunk as caissons to rock some 70 ft below riverbed. They are on 50-ft centers in one direction and 25-ft in the other, to form a rectangle.

Tops of the cylinders are 4 ft below mean river level. The reinforced concrete headstock sits on the cylinders. It weighs about 2,000 tons, measures 85 ft long, 43 ft wide and 9 ft deep.

A cofferdam 90 x 50 ft would have been needed to build the headstock in-place. The idea was discarded because of size, depth to riverbed level and lightness of sand in the bed.

Instead, the headstock was precast in a sheetpile-enclosed drydock at shore, floated and towed to the pile cluster.

The headstock is made up of two prestressed concrete tanks, one at each end. The tanks—each 43 x 29 ft—are spaced and connected by four main prestressed girders.

The tanks have 6-in.-thick walls, 6½-in.-thick floor and 9-in.-thick dividing walls.

Before floating, a steel-sheathed temporary floor of hardwood planks was placed under the girders. This gave additional buoyancy and minimized bending moments during movement.

The headstock was placed at high tide. Two launches maneuvered it into approximate position. Winches set on the tanks did the final centering.

Steel dowels were dropped through pipes set in each corner of the tanks. The tanks were shifted around slightly until the dowels fitted into recesses that had been previously prepared in the cylinder tops.

As the tide fell, the headstock slid slowly down the dowels. Concrete pads under the 9-in. dividing walls made first contact with the cylinders.

After seating, the tank compartments were filled with water and the temporary timber floor was breached. The additional weight and loss of uplift prevented the tank from refloating.

A 4-in. hollow rubber ring was placed around the outer periphery of each cylinder. These formed a seal and allowed release of water pressure under the tank. They also facilitated grouting of the space between tank and cylinder top. The cylinder tops had been covered with cast-in-place concrete slabs.

Groups of dowel bars were inserted through the tank floor and screwed into tapped holes in steel plates that had been anchored in the top of the cylinder walls.

With the main part of the headstock firmly settled, all further concrete work was done in place.

The bridge was constructed by Cleveland Bridge & Engineering Co., Ltd., for the Department of Main Roads of New South Wales. Design and supervision of the pre-stressed concrete work was by Donovan H. Lee & Partners, consulting engineers of Sydney.

(*International continued p. 72*)

4-D

WROUGHT IRON STEAM RETURN LINES NIP CORROSION IN THE BUD

What steam condensate is:

Steam condensate is a hot distilled water with no hardness or mineral content to form a protective coating over metal surfaces. Non-condensable gases are immediately absorbed by the condensate, making it extremely corrosive.

What steam condensate does:

Depending upon the percentage of free CO_2 plus O_2 contained in the steam, the corrosive condensate may cause grooving, channeling, pitting, or actual penetration of the pipe wall. Build-up of insoluble products of corrosion may plug the pipe and render it useless.

How to combat steam condensate:

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Write for Special Report on Steam Condensate Lines

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TANGLE OF PIPE (A) was a falsework tower (like B) before it buckled and sent girders crashing to the ground.

Trestle Faults Caused Collapse

Inadequate design and erection and corroded pipe are blamed for the collapse of a steel-pipe falsework tower that dropped four bridge girders to the ground in England last month, killing four men.

The girders—each weighing about 60 tons—fell during erection of a bridge across the Manchester Ship Canal at Barton (ENR Feb. 26, p. 17).

The charge was made at a coroner's inquest, where the jury returned a verdict of accidental death.

The jury added a recommendation that on all such construction projects a qualified engineer be made responsible for supervision and liaison among all parties concerned.

Wilfred Merchant, professor of structural engineering at Manchester College of Science & Technology, investigated the accident for the coroner.

Professor Merchant reported that bracing members were omitted from the 65-ft high tower that supported girder sections temporarily during erection. A foreman admitted inadvertent omission of the braces, which were specified in the drawings.

The investigator also said that the steel-pipe scaffolding appeared to be much used and corroded to an "indeterminate" extent.

Professor Merchant further called the engineering design and inspection inadequate. Testimony brought out that the towers were not inspected before the girders were put on them.

The four girders that fell had been seated on a concrete pier at one end and on the tower at the other. They were to form a 170-ft anchor span and cantilever 32 ft into a 310-ft span above the canal.

The accident did superficial damage to one pier. It is expected to delay completion—originally scheduled to take 28 months—by about two months.

The bridge is part of the Stratford-Eccles Motorway Bypass. It will be one of the longest highway bridges in England—2,425 ft, including approach viaducts. It will be 73 ft wide, with two lanes in each direction.

Center span will be 97 ft above water. Spans vary between 115 ft and 310 ft. An eight-girder system rests on reinforced concrete piers.

The bridge was designed by the Office of the Lancashire County Surveyor and Bridgemaster. General contractor is G. Dew & Co., Ltd. The erection towers were designed by subcontractor, Mills Scaffolding Co.

Rader & Associates Hired For Survey of Manila Bay

Rader & Associates, Miami architects and engineers, have been engaged by the Philippine government to prepare a feasibility report on the expansion and modernization of all shipping facilities at the port of Manila, plus dredging of the channel and turning basin. Estimated cost of the program is $14 million.

Manila Bay is one of the world's largest landlocked harbors. It has a shoreline of 120 miles.

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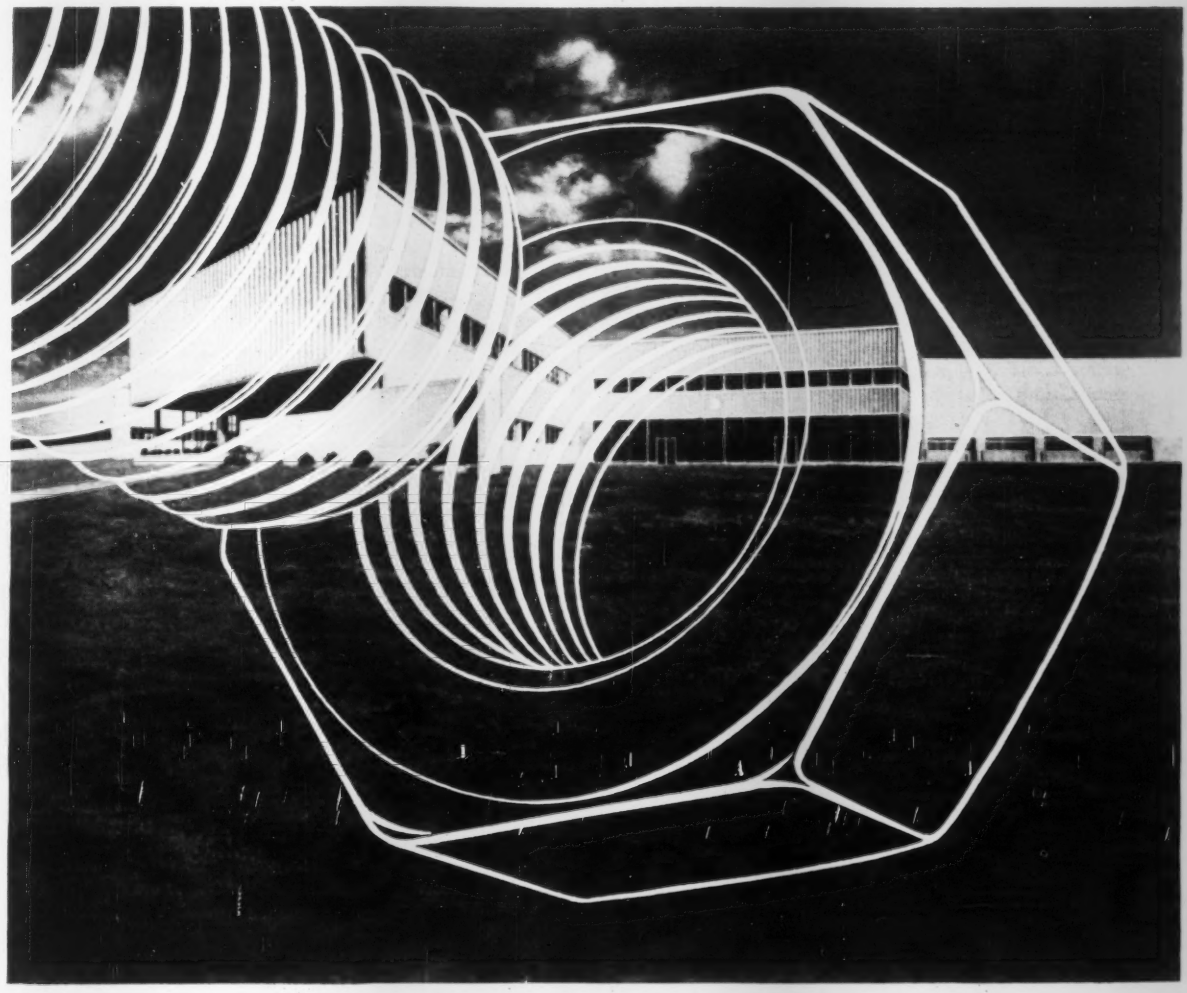

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mezzanine "basement" and open floor areas achieved with space frames and shell roof of concrete!

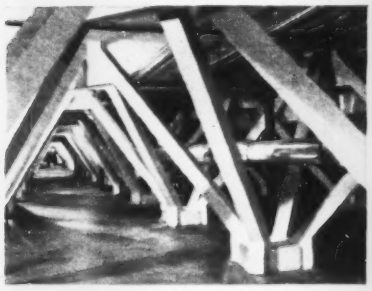
New ways of using concrete are bringing intriguing design possibilities to architects, with truly practical benefits for their clients. At Texas Instruments, Inc., Dallas, Texas, a trussing technique, using precast concrete V-tetrapods, made it possible to place some 36 special utilities in a walk-through mezzanine between floors. And concrete hyperbolic paraboloids not only created an interesting roof line, but allowed flexibility for assembly line or plant expansion by providing great expanses of unobstructed floor space.

Architects: Richard S. Colley, Corpus Christi, Texas, O'Neil Ford, San Antonio, Texas. Associates: A. B. Swank, Dallas, Texas, S. B. Zisman, San Antonio, Texas.

PORTLAND CEMENT ASSOCIATION *A national organization to improve and extend the uses of concrete*

Hyperbolic paraboloid roof gives 63-ft. wide, unobstructed bays

The roof of the Texas Instruments plant consists of many units, each made up of four similar quadrants cast to form horizontal ridges at the top. Corners of each unit are supported on separate columns. Each unit is structurally independent. Shells are uniformly 3" thick, except in the vicinity of edges and ridges.



Concrete V-tetrapods form space truss between floors

Four-legged, 5,000 psi precast concrete tetrapods act as diagonals for an 8-ft. deep space frame formed with upper level floor slab and lower level prestressed ceiling slab. The truss formed resists heavy shear forces, retains flexibility of utility arrangement.

Consulting engineer on shells: Felix Candela. Consulting engineer, general structure: Wallace Wilkerson.

For free literature *on shell construction (distributed only in U.S. and Canada) write to Portland Cement Association, Dept. A5b-17, 33 West Grand Ave., Chicago 10, Illinois.*

A Tug on Strategically Placed Cables . . .

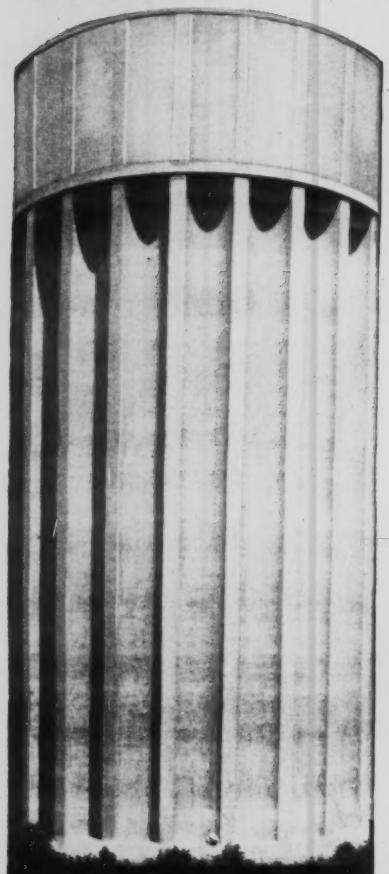
. . . Turns This Old Frame Building into . . .

. . . LA's Biggest Pile of Kindling Wood

The Mead House Wrecking Co. demolished this Los Angeles building by pulling the props out from under it. In the top picture, the wrecking cable removes some of the studs from the first story, while the stay cable controls the building's fall. The structure begins to cave in in the second picture and the third picture shows a pile of kindling wood, reports G. E. Morris, Superintendent of Building.

(*Field and Office* continued p. 76)

MORE THAN 2000 PRESTRESSED CONCRETE TANKS IN SERVICE



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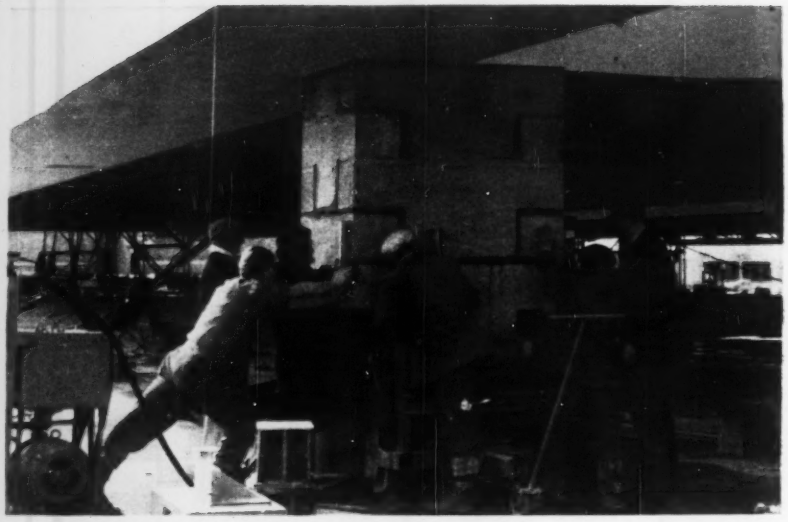
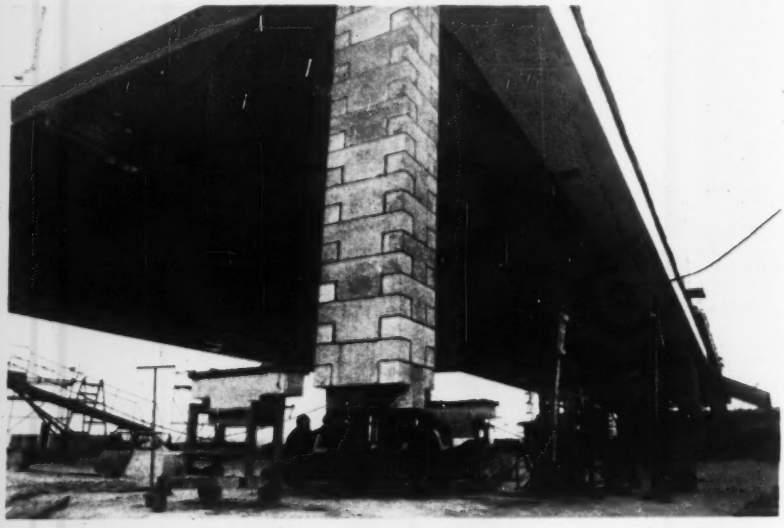


Going From Top Up to Bottom . . .



. . . English Crews Raise a Hangar

Crews started at the top and went up from there to raise three 1,550-ton hangar roofs at Abingdon, England.

They raised each roof at its corner columns with four 200-ton-capacity hydraulic jacks per working point. At each corner, workers retracted two jacks at a time, fitted in a pair of T-shaped, precast-concrete column sections, and then replaced the two jacks. After raising the roof 16 in., the opposite pair of jacks at each corner came out; men then added another pair of interlocking column sections. When they finished, the roofs were up 46 ft. For permanent bracing, the columns were prestressed with bars from foundations to roofs.

The hangar roofs, each 112 x 196 ft, were cast and prestressed right on the hangar floors. Each consists of three long barrel vaults with box girders at the outside edges and deep, thin end girders.

General contractor John Laing & Son, Ltd., worked out the lifting scheme with the consulting engineers, Ove Arup & Partners.

(*Field and Office continued p. 78*)

THERE MUST BE AN EASIER WAY

SUPPLYING BRANCHES AND SUBCONTRACTORS WITH BLUEPRINTS —IT'S EITHER A FAMINE OR A FEAST
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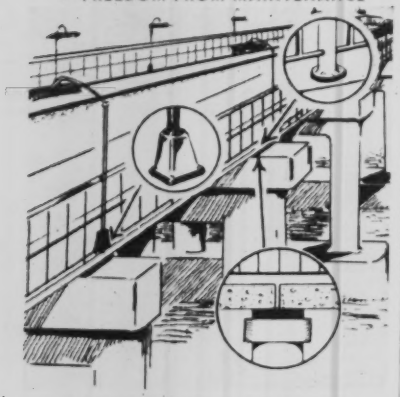

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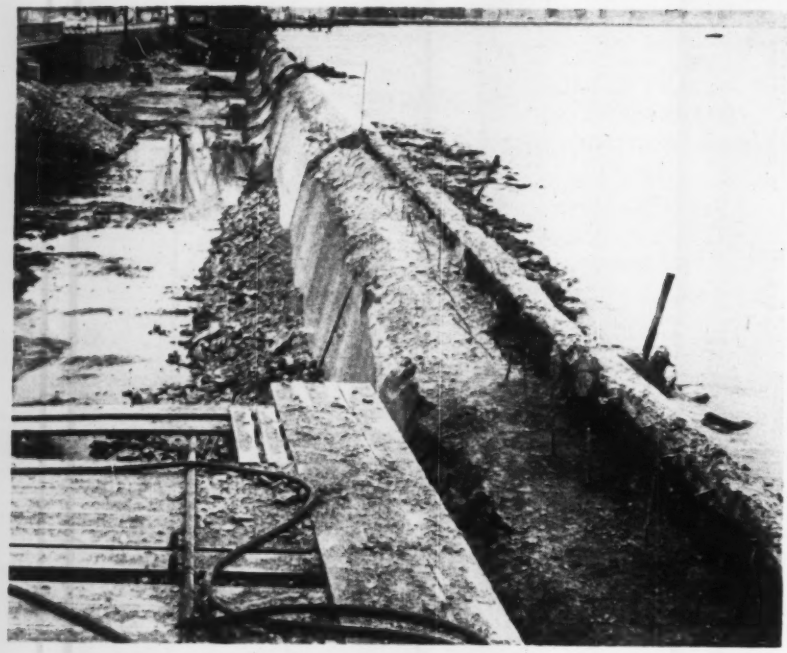


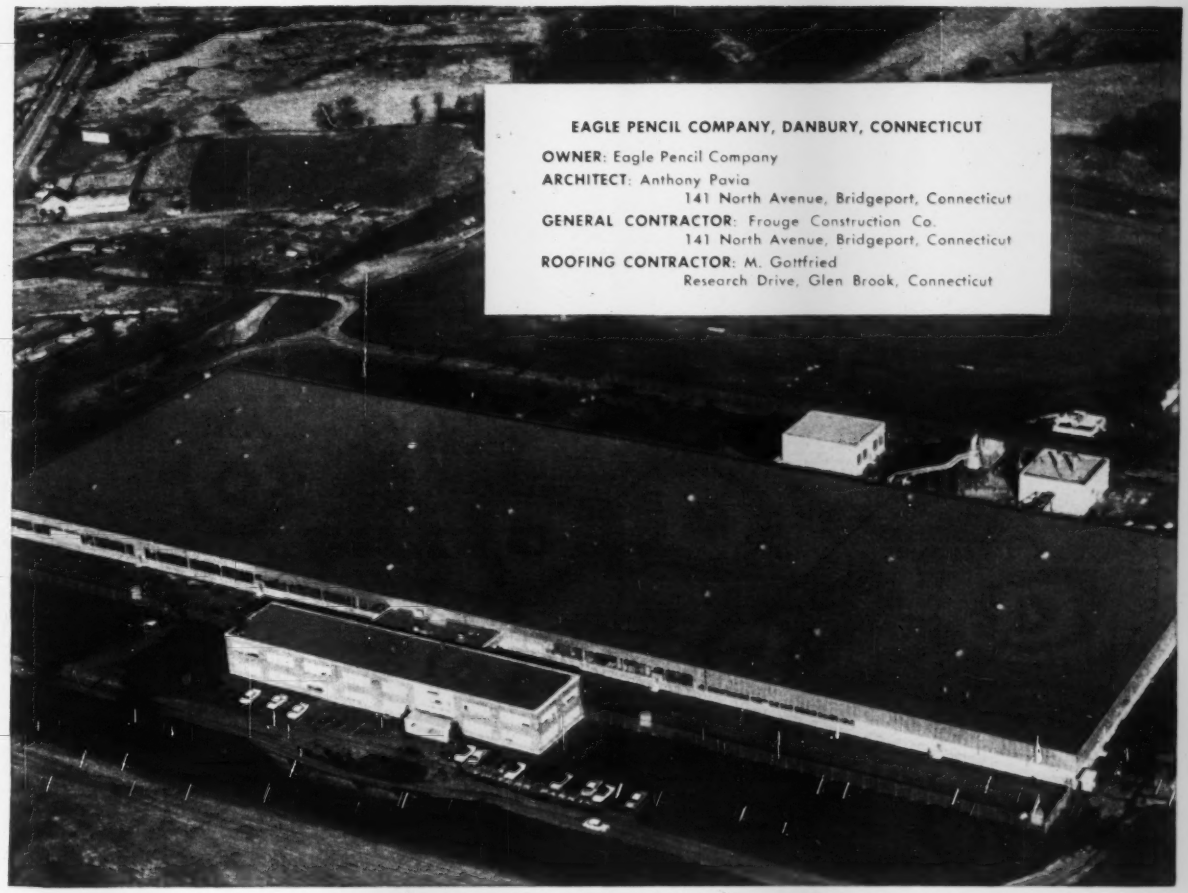
Winter Damages Spillway . . .

. . . Spring Brings Repair Job

Winter gave pretty rough treatment to a dam at Indian Lake near Brussels Point, Ohio. Continuous freezing and thawing during the cold season broke up the concrete face of the spillway.

The lake level was lowered two feet this spring so six in. of chipped concrete could be removed from the spillway top. About six to 20 in. of concrete will be added to the face. Project is expected to be completed in the fall.

(*Field and Office continued p. 80*)


EAGLE PENCIL COMPANY, DANBURY, CONNECTICUT
OWNER: Eagle Pencil Company
ARCHITECT: Anthony Pavia
141 North Avenue, Bridgeport, Connecticut
GENERAL CONTRACTOR: Frouge Construction Co.
141 North Avenue, Bridgeport, Connecticut
ROOFING CONTRACTOR: M. Gottfried
Research Drive, Glen Brook, Connecticut

2,750 squares of Ruberoid Built-Up Roofing blanket another modern plant with protection

275,000 square feet of Ruberoid Specification #203-A — Air-Vent Asphalt Felt and Special Bitumen with a gravel finish — are engineered into a tough, weather-tight roof for this mammoth new Eagle Pencil Company Plant.

The rigidly controlled quality of Ruberoid Special Roofing Bitumen — plus *engineered application by* Ruberoid Approved Roofers —has created durable roofs on all kinds of outstanding buildings across the nation.

Whether you design, build, or have turn-key projects, specify Ruberoid Special Roofing Bitumen. The owner will be assured of: 1) fast, money-saving application; 2) greater ductility that increases resistance to cracking at low temperatures; 3) low melting point that means better self-healing properties; 4) trouble-free service, even under extremes in weather, season after season for many years.

Write for Ruberoid Built-Up Roofing specification data. The RUBEROID Co., 500 Fifth Avenue, New York 36, New York.

The RUBEROID Co.®

ASPHALT AND ASBESTOS BUILDING MATERIALS

see our catalog in S or write for copy

Voids in Concrete Slabs Save Materials and Money

Cobb Park Armory, Fort Worth, Texas. Hedrick & Stanley, architect and engineer. Childs Construction Company, general contractor.

Form voids with low-cost

SONOCO

SONOVOID®

FIBRE TUBES

By displacing low-working concrete at the neutral axis, SONOVOID Fibre Tubes reduce weight and save materials in concrete construction. Because voided slabs have less deflection, they are ideal for long spans, and increase design flexibility.

In the Cobb Park Armory job illustrated, 35,000 linear feet of SONOVOID Fibre Tubes were used. The voided slab system was chosen in order to achieve a smooth ceiling over a long span—and at the same time reduce weight and save concrete and steel.

Low in cost and easy to handle, Sonoco SONOVOID Fibre Tubes are specifically designed for use in concrete floor and roof slabs, bridge decks, lift slabs, and precast, prestressed concrete piles.

Order SONOVOID Fibre Tubes in required lengths or standard 18' shipping lengths . . . sizes available from 2.25" to 36.9" O.D. (can be sawed). End closures available.

See our Catalog in Sweet's

For complete information and slab design tables, write

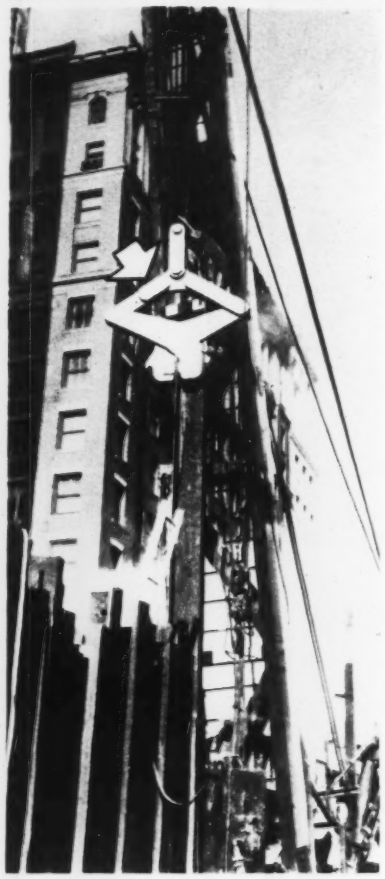
- HARTSVILLE, S. C.
- LA PUENTE, CALIF.
- MONTCLAIR, N. J.
- AKRON, INDIANA
- LONGVIEW, TEXAS
- ATLANTA, GA.
- BRANTFORD, ONT.
- MEXICO, D. F.

3687

SONOCO

Construction Products

SONOCO PRODUCTS COMPANY



Big 'Ice Tongs' Save Time In Steel Sheetpile Removal

A giant pair of "ice tongs" is credited with saving more than three weeks' work in pulling steel sheetpiling from the foundation excavation of San Francisco's Crown-Zellerbach building.

According to Orin A. Tess, superintendent for foundation subcontractor Ben C. Gerwick, Inc., the tongs saved about 15 minutes in pulling each of 600 sheetpiles.

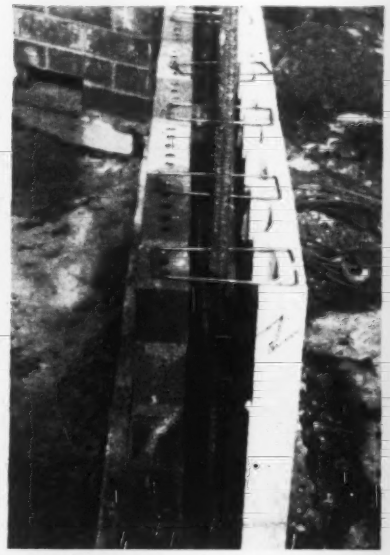
An accurate determination of the time saved was possible because the first 200 sheets were pulled by more conventional methods. Four 3 in. holes were burned in the top of each sheet for pulling pins attached to cable slings. This took time and ruined about one lineal foot of each pile.

With the tongs, no holes were needed, and the hookup was fast. The tongs, with jaws opened to a full 6 in., were lowered onto the pile. Tightening of a ten-part pulling line closed the jaws and clamped the tongs on the ½-in.-thick sheets. Then, as with any tong, the harder the pull, the stronger the bite.

Mr. Tess reports that the broad bear-

ing surface of the tong jaws, each equipped with 15 teeth, prevented any slippage during the pulling operation.

The tongs are manufactured by the Heppenstall Company of New Brighton, Pa. They are designed to pull 100,000 lb. They were in good condition upon job completion, according to Mr. Tess.



New Ties Allow High Pours In Reinforced Brick Walls

A group of men recently made up a double-face brick wall 12 ft high and concreted its reinforced cavity in a single pour.

The experiment was done in California by the Clay Brick and Tile Association to demonstrate a high-strength tie that reduces building costs on a variety of wall constructions.

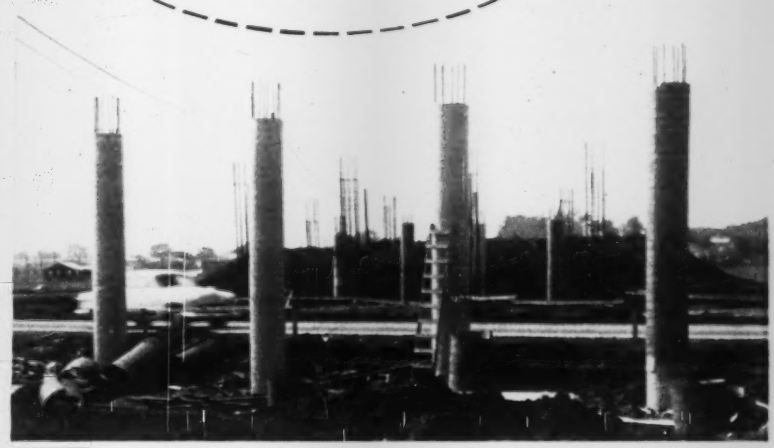
The self-supporting brick walls serve as forms for reinforced concrete walls, eliminating formwork and allowing masonry work to parallel structural work. There's no need to wait for concrete to cure before starting facing or interior brickwork.

The association says, there's a saving over conventional reinforced brick walls, and the concrete core is stronger than the core of a grouted brick wall. With the high-strength ties, a job can be set up for laying brick without interruption to install the grout. Testing a wall specimen, the association found the concrete strength to be 200 to 265 psi in shear and 4,000 psi in compression.

The association has prepared a complete report on the tie system; it is available from the Clay Brick & Tile Association, 55 New Montgomery St., San Francisco 5, Calif.

(*Field and Office continued p. 85*)

Fibre Forms Cut Costs of Round Concrete Columns



Highway overpass on U.S. 50, Johnson County, Kansas. Designer: Kansas State Highway Commission. Contractor: Swenson Construction Company.

Use time-saving, money-saving

SONOCO

Sonotube.®

FIBRE FORMS

Because they are lightweight, easy to handle and place, strip quicker, and require only minimum bracing, Sonoco SONOTUBE Fibre Forms save time, labor and money—provide the fastest, most economical means of forming round columns of concrete.

The overpass piers shown above are 20 feet high, and were formed with 30" and 36" I.D. SONOTUBE Fibre Forms.

For buildings, bridges, overpasses, schools, churches—in fact, whenever round concrete columns are specified—use SONOTUBE Fibre Forms. Approved by architects and engineers and used successfully by contractors everywhere, there's no better way to cut costs!

Choose from 3 types: Seamless (premium form for finished columns); "A" Coated (standard form for exposed columns); or "W" Coated (for unexposed columns).

Order Sonoco SONOTUBE Fibre Forms in required lengths or standard 18' shipping lengths . . . sizes available from 2" to 48" I.D.

See our Catalog in Sweet's

For complete information and prices, write

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Construction Products

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BUILT TO BOOST CONTRACTOR PROFITS

"Power Vane" Rotary Compressors supply air-operated hammers on each of the three pile-driving rigs shown here. On this job, 2800 piles are being driven in "tough ground" to a depth of 53 feet below subgrade. You can't beat CP Rotaries for dependable performance when air demand is heavy. Capacities: 125, 210, 365, 600 and 900 c.f.m.

IT TAKES EQUIPMENT WITH **POWER** AND **STAMINA** TO SAFEGUARD THE PROFIT ON TIGHT SCHEDULES

Whether the job is supplying air for pile-driving operations in balky material, drilling hundreds of blast holes through splintery shale, or bolting structural steel at breathtaking heights . . . you will find CP equipment has the muscle and the stamina to handle your toughest schedules. Helps you pick up the profits too – because it will stay on the job 24 hours a day under the severest conditions. That's why we say "Built to Boost Contractor Profits." Have your CP equipment distributor give you more complete information, or write for Catalog 600-8. Chicago Pneumatic Tool Company, 8 East 44th Street, New York 17, N. Y.

CP Torque Control Impact Wrenches like this tighten thousands of high strength bolts to exact tightness.

Bolting gangs like the 15-1/2" length and 23-lb. weight that help crews hold top speed on tight schedules,

CP self-propelled Tracdrils working in rugged rock formations like this cut costs by easily hauling own air supply up 10% grades when necessary . . . move quickly from hole to hole. Simple, positive hydraulic controls make one-man operation practical. A time-saving piece of equipment in rough going.

Chicago Pneumatic

PNEUMATIC TOOLS • AIR COMPRESSORS • ELECTRIC TOOLS • DIESEL ENGINES
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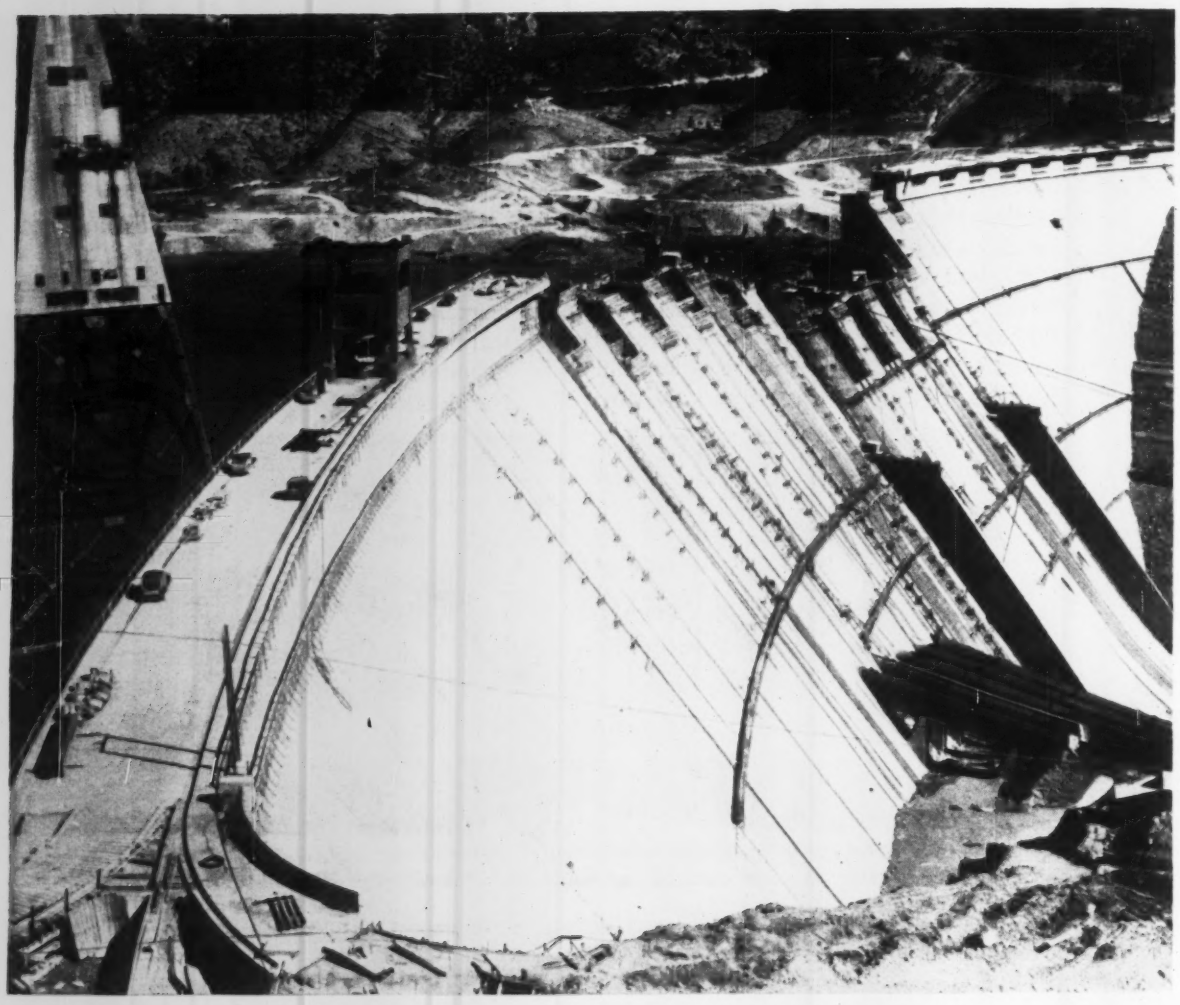

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fast, efficient, when and where you want it. You get that kind of service only from a company like Ætna Casualty, with more than 70 supervising offices in key cities and thousands of experienced agents from coast to coast!

EXPERIENCE . . .
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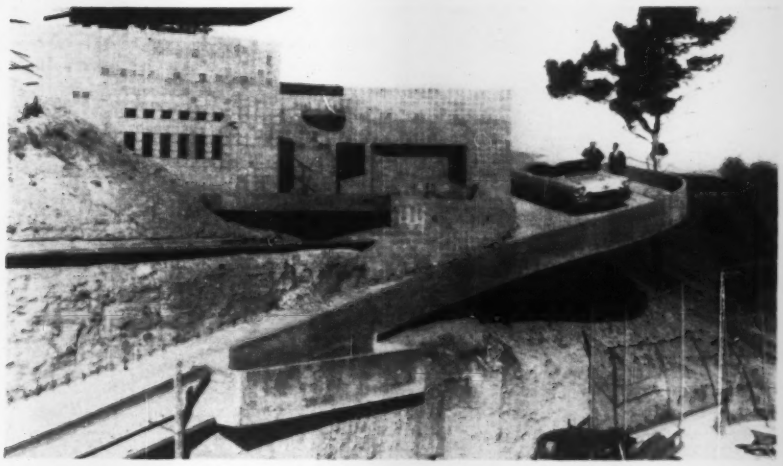
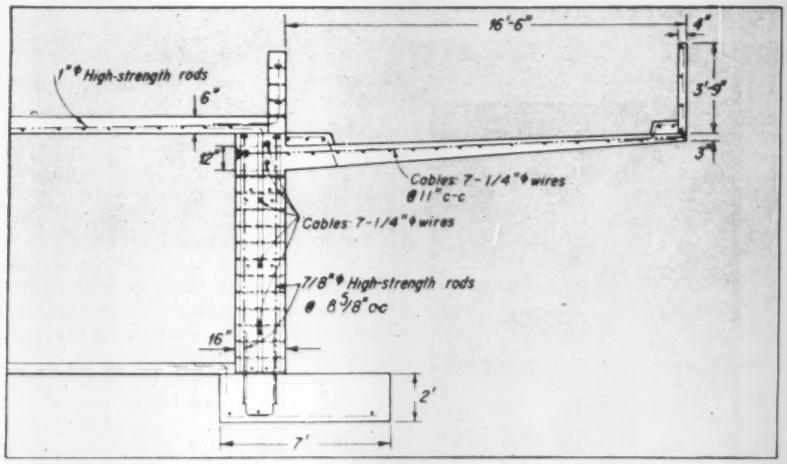


A steep hill made the architect go in circles with . . .



. . . a prestressed concrete cantilever as a driveway.

Getting Around a Site Problem

One of the most difficult problems faced by Architect John Lautner in designing a hilltop house in Los Angeles was providing automobile access. His solution: a circular concrete ramp circumscribing the residence.

But because of the steepness of the site, the ramp had to project out from the slope. And for esthetic reasons the designer decided to cantilever the road from the concrete-block walls of the house. Design of the cantilever was turned over to T. Y. Lin & Associates, consulting engineers.

Lin solved the problem simply and economically by using prestressed concrete. He called for concrete-block walls, 16 in. thick, with ordinary reinforcing and vertical and horizontal tendons.

The vertical tendons consist of ⅞-in. dia high-strength bars near inner and outer faces of the walls. They are anchored at the base of the walls in the footing and at the top in the inner end of the ramp. The horizontal tendons are cables composed of seven ¼-in.-dia wires. Similar horizontal cables are used to prestress the cantilever.

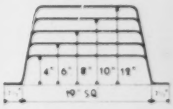
The big problem with this design was not technical. It was getting the approval of the Los Angeles building department. The city code did not cover prestressed concrete.

The building department rejected the plans at first. If it had not been for the willingness of the owner of the house, Kenneth Reiner, president of the Kaynar Co., to contest the rejection (and suffer delays in construction), the design could not have been used.

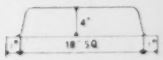
In modern horizontal buildings, too

GRID SYSTEM CONSTRUCTION OFFERS EXTRA ADVANTAGES!

With economical, adaptable GRID SYSTEM construction, many things are possible! GRID SYSTEM two-way ribbed concrete slabs carry maximum loads — allow for the addition of extra floors, penthouse additions, roof parking or storage, etc. Interchangeable steel GRID domes offer wide, open spans and great flexibility in utility layout. GRID SYSTEM ribbed ceilings create an interesting decorative effect, provide good acoustical properties. Air diffusers, lights, acoustic tile or utilities install easily in the recessed areas. Now in use in thousands of buildings from coast to coast*, versatile GRID SYSTEM cuts building time and costs to a minimum.



OVERALL PLAN SIZE — 24" x 24"



OVERALL PLAN SIZE — 22" x 22"

Interchangeable GRID domes are delivered to the job site in quantities large enough for any project. No charge is made for normal wear and tear, including necessary screw holes for sleeves, inserts, etc. All GRID domes have the same slope, for uniform appearance.

*Among the many buildings utilizing GRID SYSTEM construction are: Lexington Junior High School, Lexington, Mass.; Administration Building, Library Building and Classroom Building, Furman University, Greenville, S.C.; Pan American Airways Hangar 214, Idlewild Airport, N.Y.; Off-Street Parking Garage, Post Office Sq., Boston, Mass.; Prudential North Central Home Office Building, Minneapolis, Minn.

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Gentlemen:

☐ Please send me your catalog, with full information on GRID SYSTEM construction.

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To Make Steps, Ramps and Floors NON-SLIP

Use Norton Sidewalk Abrasive in Resin

How would you like to make those dangerous steps, ramps and floor areas non-slip — and do it quickly and economically? You can with the new resins plus Norton Sidewalk Abrasive. Here's how:

Step 1 Clean the wood, concrete or metal surface (new or old) thoroughly. This is *important*. No resin will bond solidly or permanently to a poorly prepared surface.

Step 2 Brush, roll or spray on an even coat of one of the new resins*.

Step 3 Sprinkle over the surface a uniform layer of Norton Sidewalk Abrasive in the correct size (depends on nature of surface and type of traffic).

Step 4 Remove surplus abrasive and apply a second locking coat of resin.

The resulting surface is highly non-slip, *wet* or *dry*, and extremely durable. It is waterproof and resistant to acids and to alkalis. The Norton Sidewalk Abrasive can be either ALUNDUM† aluminum oxide or CRYSTOLON† silicon carbide — depending on preference and the type of job.

Send for information on Norton Sidewalk Abrasive, also for catalog 1935-H on ALUNDUM Aggregate for terrazzo and cement floors.

*Names and more detailed installation instructions on request.

†Trademark reg. U. S. Patent Office.

NORTON

NON-SLIP FLOORS

NORTON COMPANY
WORCESTER 6, MASS.

ALUNDUM AGGREGATE for Terrazzo and Cement • ALUNDUM STAIR and FLOOR TILE
ALUNDUM and CRYSTOLON Sidewalk Abrasives

Compacting Facts

Ways to get more out of your compacting units

Compaction—one of the most important steps in building a road—is under continual study by manufacturers, public agencies and builders. Aim: Better roads, more efficient machines.

Here are conclusions from a study of one facet of the problem: the performance and efficiency of standard types of compacting units.

- The optimum moisture content for maximum efficiency of rubber-tired rollers is within 1% or 2% of the optimum moisture content as determined by the standard Proctor Compaction test.
- As clay content increases, optimum moisture content for sheepsfoot rollers tends to be lower than the standard laboratory optimum.
- For rubber-tired rollers, most of the compaction is obtained by 8 to 10 passes of the unit. Any increase in soil density beyond that point is produced at a substantial increase in unit cost of compaction.
- Increasing the gross weight of rubber-tired rollers produces a corresponding increase in the efficiency of the compactor, and a decrease in cost per yard compacted.
- For the normal range of foot pressures on sheepsfoot rollers and plastic soil, the unit with the larger foot size produces the specified density in the fewest number of passes.
- The highest safe operating speed of the compactor produces the highest number of yards compacted per hour, other conditions being equal.
- For heavy compactors operating at full weight, an increase in the thickness of the soil lift—up to a maximum thickness of 12 in.—produces a corresponding increase in the roller production without any sacrifice in compaction.

Providing that the soil is at the right moisture content for the machine, the most efficient way to produce satisfactory compaction is to have the fully loaded compactor move at speeds of up to 5 mph. If this does not achieve satisfactory results within eight passes, than a heavier unit must be used.

These conclusions are part of a preliminary report of investigations being conducted by the Department of Civil Engineering, Queen's University, Kingston, Ontario, in cooperation with the Ontario Department of Highways.

(Research continued p. 88)

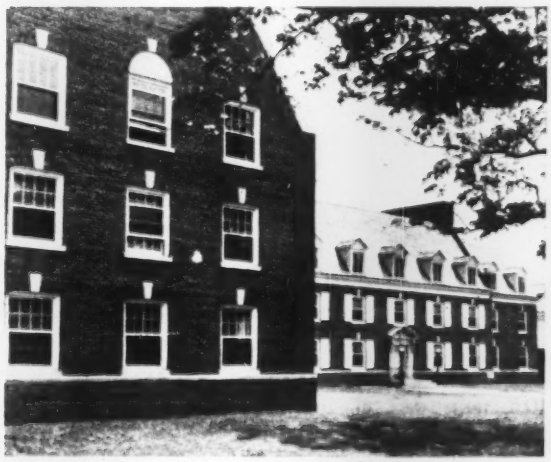
"More than satisfied" with

LEHIGH MORTAR CEMENT

Women's Dormitory "A", State University College For Teachers at Albany. Accommodates 200 students.

Owner: Dormitory Authority of the State of New York
Architect: H. O. Fullerton, Albany, N.Y.
Contractor: Sano-Rubin Construction Co., Inc., Albany, N.Y.
Dealer: Builders Material & Supply of Albany, Inc., Albany, N.Y.

Closeup shows results of good design, good workmanship and quality materials. Lehigh Mortar Cement was used with brick, block and structural tile.



• This new dormitory is an excellent example of warm colonial design—its beauty and durability enhanced by good workmanship, and quality materials.

The contractor, Sano-Rubin Construction Company, chose Lehigh Mortar Cement for all masonry. They report "We had used Lehigh Mortar Cement on many previous jobs and have always been more than satisfied with this mortar, and the results produced."

The workability and plasticity of Lehigh Mortar Cement help masons do a good job. Its uniformity and durability contribute to clean, strong, weathertight walls.

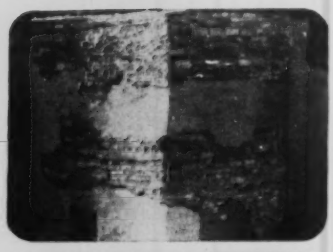
Try Lehigh Mortar Cement on your next job. See for yourself how it can help you produce top quality masonry construction.

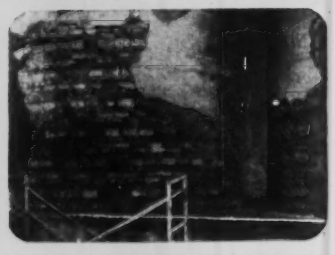
- LEHIGH MORTAR CEMENT
- LEHIGH EARLY STRENGTH CEMENT
- LEHIGH AIR-ENTRAINING CEMENT
- LEHIGH PORTLAND CEMENT

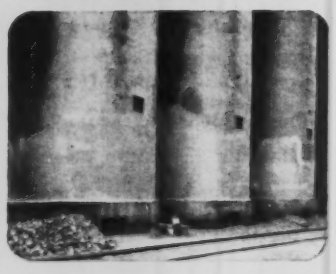
Lehigh Portland Cement Co.

ALLENTOWN, PA.

THORITE and THOROSEAL repaired these Silos and made them waterproof!





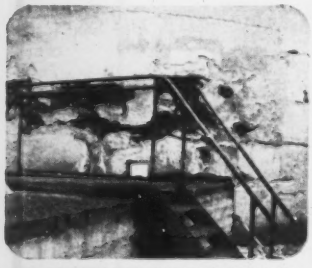


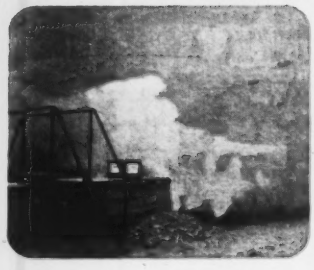
CAUSE

The freeze-thaw cycle caused extreme damage to the masonry of these silos. Heavy cement surfacing deteriorated, exposing brick and mortar, vulnerable to water.

CORRECTION

All loose and scaling concrete was thoroughly removed by use of wirebrush, hammer, chisel or sandblasting. Reinforcing mesh was then locked to the exposed brick, over which THORITE, a twenty-minute set patching compound, was troweled, bringing the surface level with surrounding concrete. Immediately after, the THORITE patch and all silo masonry surface was sealed with brush coat of THOROSEAL to protect the entire structure.

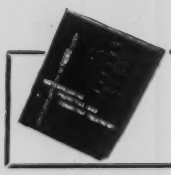




Opposite photo shows huge crevices caused from deterioration and would ordinarily require forming into which concrete would be poured. THORITE eliminates this costly procedure. THORITE does not slump and can be formed by trowel to any contour of surrounding surfaces, as shown in these opposite pictures.

ALL ABOUT THE THORO SYSTEM

Write for our New 20 page brochure!



Standard Dry Wall Products Inc.

NEW EAGLE, PA. CENTERVILLE, IND.

TVA Designs Experimental Ultra-High Voltage Line

The Tennessee Valley Authority is planning an experimental 460,000 volt transmission line primarily to gain experience in construction of such lines. It is expected to be in operation by September, 1960, as a seven-mile portion of a new standard transmission line from TVA's Johnsonville steam plant to Mount Pleasant, Tenn.

The ultra-high-voltage stretch of line will have a capacity three times that of the 161,000-volt line with no greater losses in transmission. However only the normal 161,000 volts will pass over the experimental portion even though the towers, conductors and all other details will be built to handle the higher voltage.

General Electric Co. is installing a 750,000-volt line at Pittsfield, Mass. This four-mile line will be operated eventually at the design voltage for experimental purposes.

Lamp Research Center Will Shed Light on Light

General Electric has built a new lighting research center at Nela Park, Cleveland. Its 50 laboratories will be devoted to pure research in lighting.

The center is divided into three sections: The lamp research laboratory will investigate chemical and physical processes that give off light; its findings should provide basic knowledge with which lamp designers can create new and more efficient lamp types.

The engineering research laboratory will interpret the scientific findings and translate them into practices.

The radiant-energy effects laboratory will investigate the effects of light on man, plant and animals.

The center is a three-story, T-shaped, brick structure, containing 12,000 sq ft of research space.

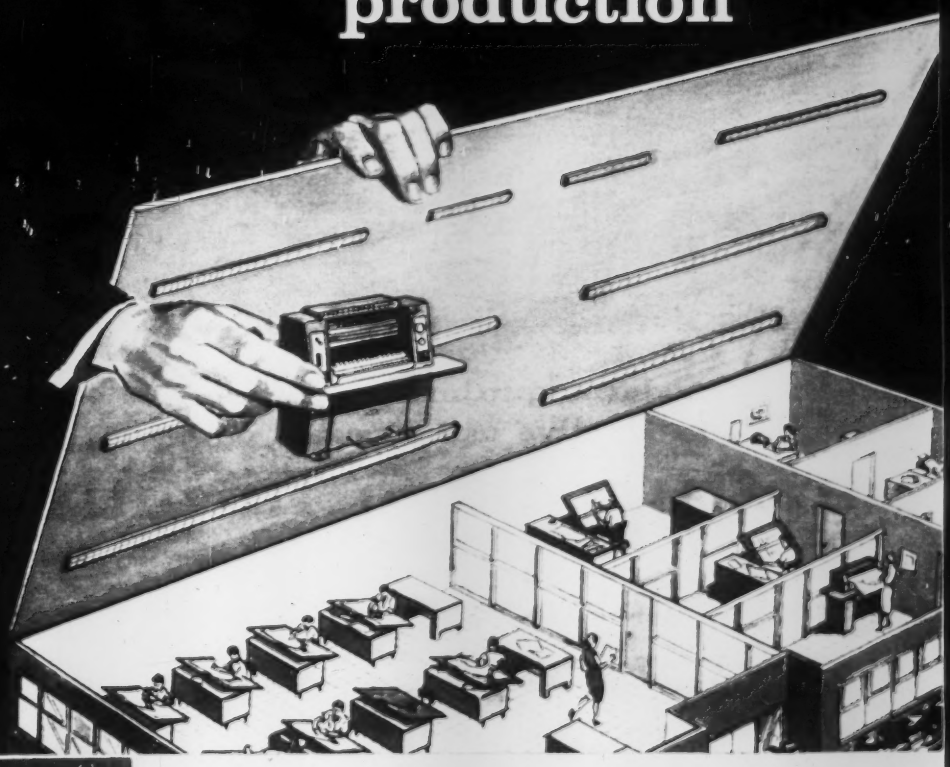
Top Quality Map Paper Seen in Polyesters

National Bureau of Standards' research in strength characteristics of synthetic-fiber map paper indicates that a polyester-cellulose sheet has high dimensional stability and better strength properties than commercial map paper.

A paper containing polyamide fibers is said to be low in dimensional stability, but exceptional in folding, tearing, and bursting strengths.

The tests, sponsored by the Army Engineer Research and Development Laboratories, were made on specimens of three experimental handsheets and two commercially produced papers.

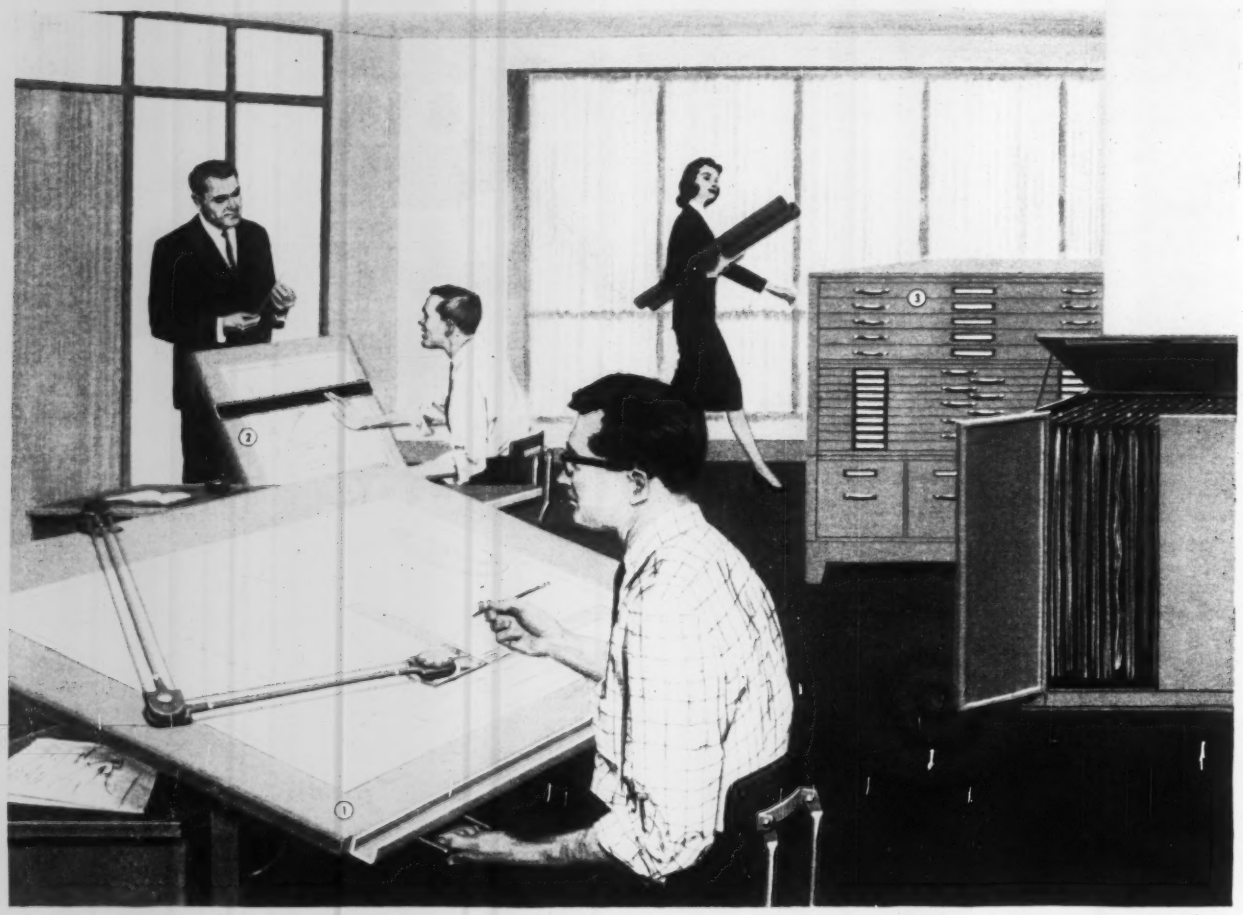
how the Bruning Man raises the "ceiling" on drafting room production



BRUNING

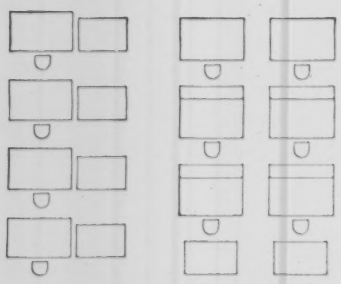
5 WAYS TO MODERNIZE YOUR DRAFTING DEPARTMENT FOR MORE MANPOWER, LOWER COSTS

In this era of fast, intense, and ever-changing engineering progress; drafting departments are being called on for faster, more accurate work. Costly expansion need not be the only answer. Read on the following pages how the Bruning Man's reasonably priced modernization program will more than pay for itself in greater production and lower costs.



modernize to make 50% more productive use of space with

drafting room furniture



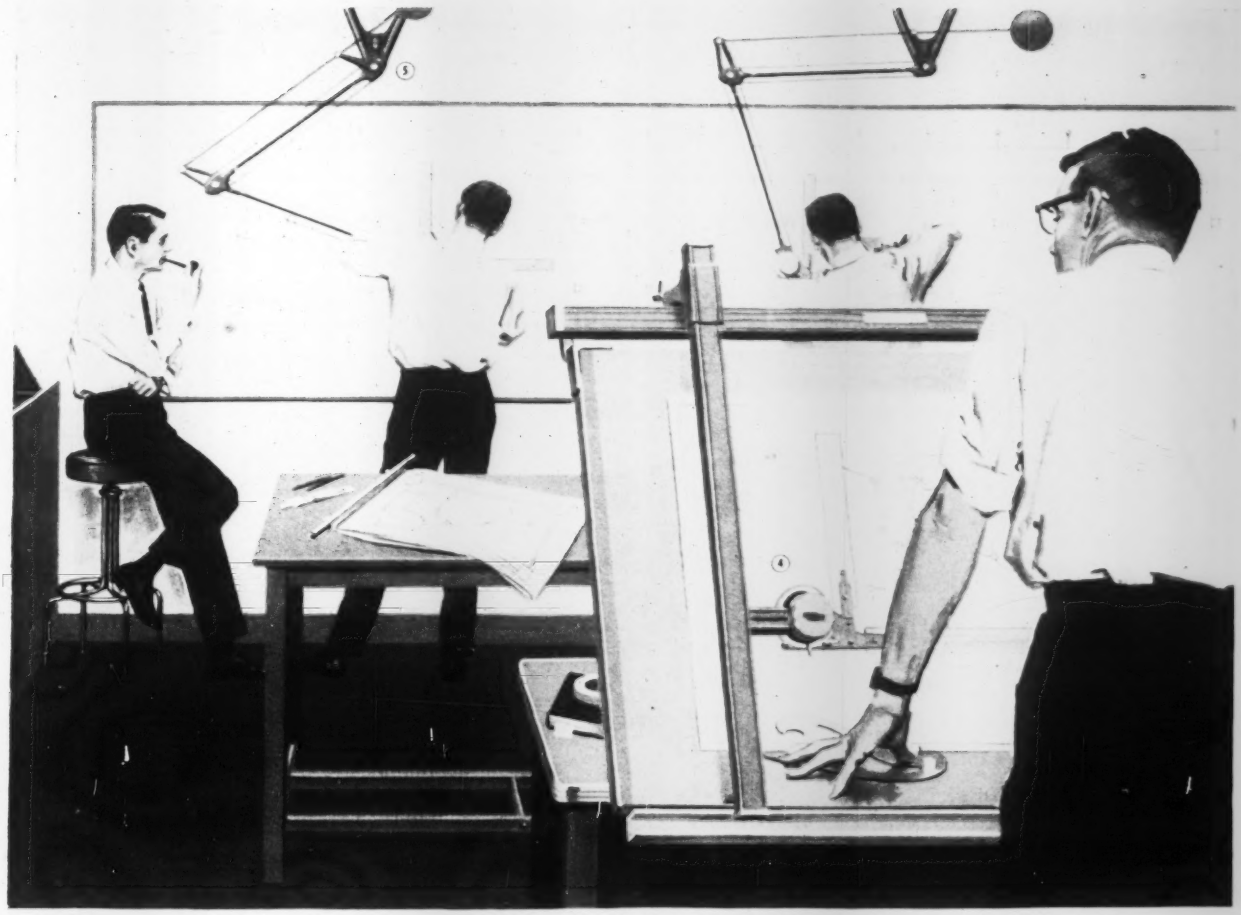
Conventional Arrangement **Auto-Shift Arrangement**

1. Hamilton Auto-Shift Tables. You can put six modern Auto-Shift units where you now have four boards with separate reference desks. Unique design of Auto-Shift lets draftsman work on any part of the board, reach reference table and drawers without leaving his seat. Your draftsmen work faster and better with far less fatigue.

2. Hamilton "L" Contour Tables. The unique "L" shape of this combination board and desk unit provides new reference convenience, new personalized working space, new smartness of surroundings for modern draftsmen and engineers. They work faster, better, and with more pride in their work and surroundings.

3. Hamilton UnitSystem Files. You file drawings and records in units especially designed for them by size and frequency of use. Drawings are faster to file and find. UnitSystem's interlocking feature lets you combine exactly the units you need in higher stacks to save space and to expand filing efficiently and economically.

BRUNING



modernize to speed drafting up to 40% with

drafting machines

Over conventional equipment, modern Bruning drafters speed drafting up to 40% on most jobs . . . up to 50% on some structural drawings. They are far faster and easier to operate than any other drafting machine on the market.

4. All-New Neoglide Drafters. A complete departure from conventional drafting machine design, Bruning's new Neoglide drafters give the draftsman complete maneuverability on any board **at any angle.** Reinforced U-beam construction offers amazing rigidity, strength, and accuracy. Yet resistance-free movement of the counterweight and vertical beam provide free-and-easy "floating" action. No cables or belts to break, stretch, or sag. Touch-control protractor head gives automatic, pin-point angle selection at a touch of the control button.

5. Bruning Track Drafters. Here is the modern, space-saving way to turn out large drawings, faster and more accurately. Unsurpassed anywhere, Bruning track drafters offer automatic indexing, double veniers, and fast scale changes. Models available to provide vertical coverage up to 84" and unlimited horizontal coverage.

The Bruning Man Gives you the Help you Need When you Need It. He's Located in Principal Cities of U. S. and Canada.

BRUNING

modernize to speed reproduction, eliminate upkeep with

reproduction machines

There's a Modern Bruning Copyflex Machine to Meet Every Need and Budget.

Model 675

Model 35

Model 250

Model 300

Copytron Microfilm Printer

Model 42

1. New Copyflex 675. Years ahead of any reproduction machine, Bruning's Model 675 offers a host of new time-and-work-saving advantages. These include a four-way tracing tray that adjusts to stack or permit fast removal of tracings . . . a feed band system that eliminates curling of tracings . . . enclosed easy-to-load feed rods for roll stock . . . unique system of vacuum ports in the feedboard that hold large sheets and roll stock in position . . . a split-shade lamp control that enables simultaneous insertion of different materials . . . and an electrically controlled push-button machine height adjustment. It offers a mechanical speed of up to 75 f. p. m. and a fast-printing 7,500 watt lamp variable to 5,000 watts, takes sheets and roll stock up to 42" wide.

2. Modern Copyflex 300. This unique, low-cost table top model offers a full 30-inch printing width, gives you professional prints in seconds. By supplementing your main reproduction center with strategically located 300's, you add new dimensions in convenience and economy to your department.

Copyflex machines are odorless, require no venting or plumbing. 8½ x 11" prints cost 1¼¢ each for materials.

BRUNING *Copyflex*® Low-Cost Diazo Reproduction at Its Best!

Call the Bruning Man. His experience and knowledge can save you time and money.

modernize to slash time of re-working drawings up to 90% with

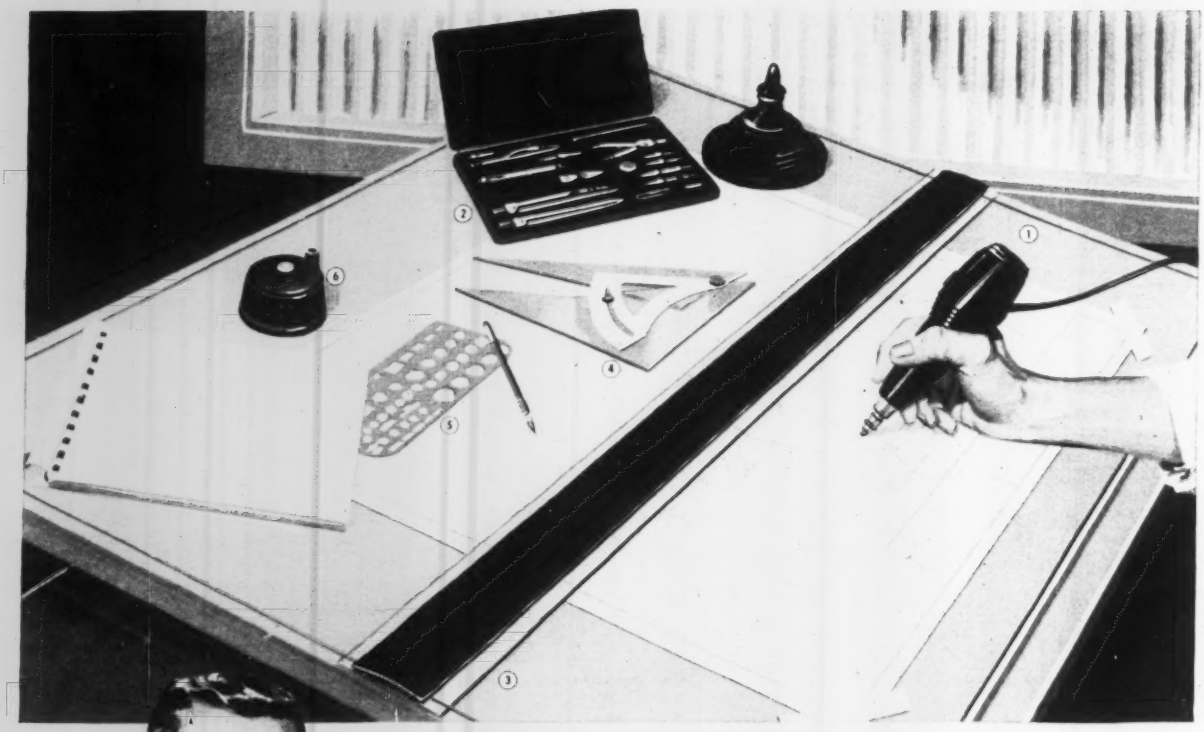
intermediates

3. For design changes or re-working old drawings, modern Bruning intermediates can save up to 90% of the tracing usually required. The draftsman has a Copyflex intermediate (reproducible print) made of the original drawing. Unwanted portions can either be masked out in the printing operation or eradicated on the intermediate itself. New lines then can be added to the intermediate without the tedious, time-taking work of tracing those sections which do not require alteration.

Bruning versatile intermediates are also widely used to speed and simplify print distribution. Sent to distant points, intermediates can be used again and again to make needed prints or to incorporate changes without waiting for new prints from headquarters.

Bruning's complete line of intermediates include paper, matte film, clear film, and cloth.

BRUNING



modernize to speed and simplify draftsmen's work with

drafting aids

1. Bruning Electric Eraser. Minutes add up to hours of time and work saved, over manual erasing, with Bruning's newly improved electric eraser. It's the original hollow-shaft eraser, more widely used than any other. It features 7" erasers, finger-tip "on-off" switch.

2. Stainless-Supreme Drawing Instruments. You'll be time and money ahead with higher precision, durability, and beauty offered only by instruments made entirely of non-tarnishing stainless steel. 5 times harder than brass or German silver. Specially hardened, swivel-type ruling pen points are fast and easy to clean.

3. Bi-Liner Parallel Straightedge. Over conventional T-squares, these moderately priced straightedges more than pay the price difference in faster, more accurate drafting. Features include: warp-proof blade, ball bearing blade pulleys, full length duraluminum tunnel, board-top mounting attachments. Bruning's complete line includes special model with retractile rollers.

4. Adjustable Triangle. This modern precision tool combines the functions of protractor and universal triangle to enable draftsmen to draw all angles faster, easier, and more accurately. Will not discolor or become brittle. Range of sizes.

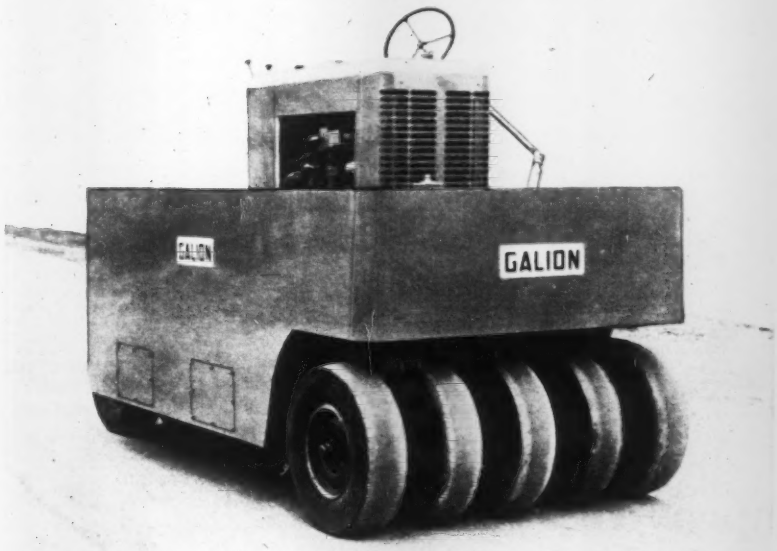
5. Bolts and Nuts Template. Bruning's wide variety of modern templates enable faster, neater, more uniform execution of symbols and shapes for every type of drawing. Precision-cut from wear-resistant plastics to assure accuracy and durability.

6. Tru-Point Lead Pointer. Here is the fast, convenient, pleasant way of obtaining clean, ideal draftsman's points. Only one hand need be used to rotate pencil and pointer top around stationary base. Graphite dust is trapped inside. Abrasive liners are replaceable.

Call the Bruning Man. **He's backed by a company with over 60 years' experience as manufacturer, researcher, and supplier.**

BRUNING

Charles Bruning Company, Inc.
1800 Central Road, Mount Prospect, Ill.
In Canada: 105 Church Street, Ontario 1



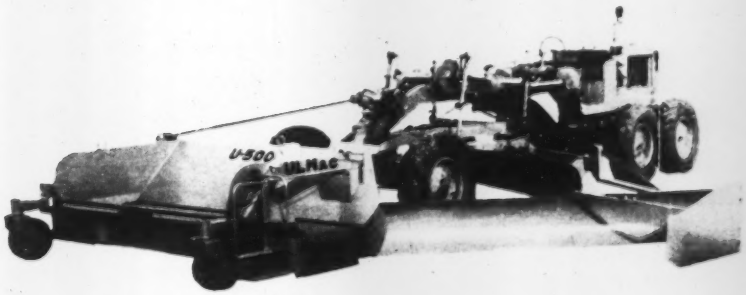
Nine-Wheel Roller for Compaction

Galion has added a nine-wheel, 12-ton unit to its line of self-propelled, rubber-tired rollers for compacting base and finish courses.

The roller has four drive wheels and five steering wheels. Front and rear treads overlap.

When fully ballasted, the pneumatic tired compactor weighs 24,500 lb, developing 340 lb compression per inch width of tire.

An 80-hp gasoline engine and synchromesh transmission provide four forward and four reverse speeds, ranging from 2.5 to 16 mph. GALION IRON WORKS & MFG. CO., GALION, OHIO.



Shoulder Spreader Gives High Control

The U-500 shoulder spreader makes spreads to 12 ft. A curved blade mixes and rolls the material—including hot mix—to minimize segregation and reduce side draft, the manufacturer states.

Depth of spreads can be adjusted from 6 in. above to 18 in. below pavement level.

The U-500 has four wheel suspension with solid rubber tires. All wheels are adjustable. Rear casters act as depth control.

Height of the 36-in.-wide, self-powered conveyor can be matched to dump truck gate heights. The spreader attaches to the Caterpillar No. 12 or 112 motor grader. ULMAC EQUIPMENT CO., INC., EL PASO, ILL.

Expanded Line in '59

Ten new rigs mark Austin-Western Centennial

To celebrate its 100th anniversary this year, Austin-Western, a division of Baldwin-Lima-Hamilton Corp., will introduce ten new machines to augment its line of construction, earth-moving, and materials handling equipment. Included will be three self-propelled hydraulic cranes, five graders and two compactors.

Already available on a three week delivery are the four wheel Pacer 200, and the six wheel Super 200. Both machines have a basic weight of 20,000 lb and each is powered by a 106-hp GMC diesel engine. Both have power steering and all-wheel drive. They are sold with either four or six speed conventional clutches or torque converters. On an optional basis, a hydraulically operated power-tilt mold board is available.

These two machines bring to six the number of power graders manufactured by Austin Western. Later in the year, three additional scrapers—all bigger and more powerful than any now made by the firm—will be introduced. They will be designated as the Pacer 400, the Super 400 and the Super 500.

Also now available are two compaction units. One is a vibratory attachment previously usable only with the Austin Western Roler compactor. Now, according to the manufacturer, it has been modified to fit any three wheel roller. This unit has three 450-lb. hydraulically actuated shoes that oscillate about 2,200 times a minute.

The other unit available is a two shoe vibrating widener attachment for road shoulder work.

The first of Austin Western's new self-propelled hydraulic cranes was unveiled on May 1. It will be a Model 410 with a lifting and carrying capacity in the 10 ton range.

During the summer the Model 110 will make its appearance. This will be a three-wheel, low cost, low capacity material handling rig, available in several degrees of refinement ranging from a unit with a non-telescoping, non-rotating boom to a model with a telescoping boom rotating through 220 deg.

Last of the cranes to be produced will be the Model 310. It will have a lattice type folding boom that can be extended to 55 ft. Illustrated specification and data sheets for all machines are available on request. AUSTIN WESTERN, AURORA, ILL.

(New *Products* continued p. 96)

A bigger circle is included as . . .

Grader Line Is Improved

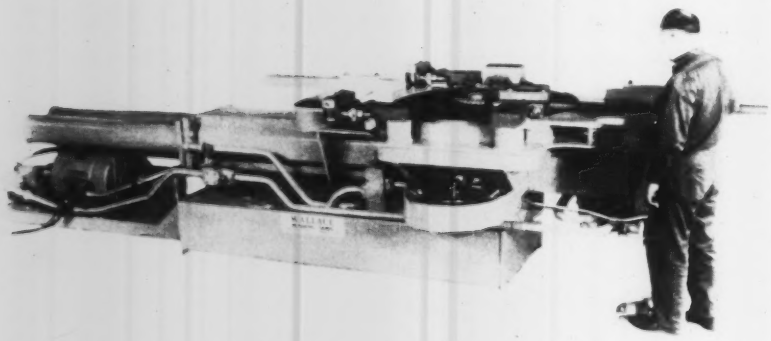
A bigger circle, more visibility, easy moldboard tilt adjustment and new 6-cylinder engines are some of the improvements made in the LeTourneau-Wesh Westinghouse motor grader line.

The new circle is 63 in., nine more than formerly. This is designed for a better job of finish grading.

One nut is loosened on each circle leg to adjust the moldboard tilt. The adjustment can be done in as little as 15 minutes, the manufacturer says.

The lift housing box-beam support, formerly on top of the frame, is now welded through the frame. This relocation opens up the top for visibility.

Six-cylinder, 4-cycle, Cummins C-160-BI engines are available for the 440, 550 and Power-flow 550 models grader models. The powerplants range from 115 to 145 hp. LeTourneau-Westinghouse, Peoria, Ill.



A Big Bender for Big Bars

The Wallace #92 bar bender has been designed to handle reinforcing steel up to 2¼ in. dia.

Hydraulic power drives two separate cylinders for equal force bending bars in either direction. It's not necessary to turn bars end for end in making double offset bends. In addition, there are two foot control pedals, one for right and one for lefthand bending. A speed control valve permits bending of high carbon steel bars.

The yard bender is powered by a 30 hp electric motor, and may be wired for either 220 or 440 volts, 3-phase, 60 cycle alternating current. Electric control circuit is 110 volts. Floor space required, without bar-swing allowance, is 4 x 17½ ft. The complete heavy-bar bender weighs 10,000 lbs. Wallace Supplies Mfg. Co., 1304 Diversey Parkway, Chicago 14, Ill.

Kneading Compactor Simulates Field Condition

Kneading action can be developed that simulates compaction of test materials under actual field condition with a new electro-hydraulic compactor, according to its developer, Soiltest, Inc.

The new machine, Model CN-425A, is designed for testing bituminous mixes, asphaltic concrete, soils and similar materials. It features adjustable compaction foot pressures, adjustable time of dwell on the specimen and a variable rate of compaction.

Samples may be compacted in either a 4- or 6-in. dia. mold. A separate compacting foot for use with each mold is provided and a heated foot assembly is available as an accessory. The compactor is small and can be floor or table mounted. Soiltest, Inc., 4711 W. North Ave., Chicago 39, Ill.

Ryerson Now Provides Post-Tensioning Service

Prestressing concrete by the post tensioning method is now part of the service provided by the reinforcing division of Joseph T. Ryerson & Son Inc.

The company has set up facilities at its Chicago and Los Angeles plants for supplying post-tensioning assemblies for shipment to job sites throughout the country.

Service on post-tensioning steel is available from each of Ryerson's 20 plants from coast to coast. Joseph T. Ryerson & Son, Inc., Box 8000-A, Chicago 80, Ill.

Package Heater Designed For High Ceiling Areas

Heating problems in buildings with high ceilings can be overcome with the new Renzor Downflow direct-fired gas heater.

The manufacturer says the equipment, installed even 40 ft above floor level, can heat airplane hangars, warehouses and manufacturing plants. Four basic sizes, from 300,000 BTUH to 600,000 BTUH, will blow heated air in either spot concentrations or diffused patterns. Renzor Manufacturing Co., Mercer, Pa.

(New Products continued p. 100)

Engineers compare the high quality and contrast of an 11″ x 17″ stock print reduced from an original 22″ x 34″ drawing. The print is a sample of many run off on an offset duplicator from an inexpensive offset paper master prepared xerographically by XeroX Model 1218 copying equipment.

thanks to XEROGRAPHY...

Stock-Print System Saves

Cutler-Hammer Inc. $50,000 yearly...

Adoption of a stock file system of expendable engineering prints is saving Cutler-Hammer Inc., Milwaukee, $50,000 a year.

The system, and consequent savings, is made possible by XeroX® Model 1218 copying equipment. This equipment, operating by xerography, the clean, fast, dry, electrostatic copying process, reduces original drawings as large as 24″ x 36″ onto inexpensive offset paper masters. From them, multiple copies for stock-print filing are quickly run off on an offset duplicator.

J. E. Jones, head of the Cutler-Hammer drafting department, sums up other benefits this way:

"Xerography and offset duplicating have brought about valuable changes in our print storage and distribution. We can now reduce print sizes of B, C, and D drawings, thereby saving time, space, materials, and hand folding. Better service to departments needing prints has resulted. Wear and tear on our drawings has been reduced, and xerography gives us higher quality, high contrast, sharp, permanent prints.

"This system allows us to issue prints without delay. Reference prints are immediately available from the expendable print files. Trained personnel are not required to wait for print service. Expendable prints can be discarded after use. They need not be re-filed."

XeroX Model 1218 copying equipment can help you, too. Write for proof-of-performance folders showing how firms of all kinds and sizes are speeding paperwork and saving thousands of dollars yearly by xerography. HALOID XEROX INC., 59-137X Haloid St., Rochester 3, N. Y. Branch offices in principal U.S. and Canadian cities. Overseas: Rank-Xerox Ltd., London.

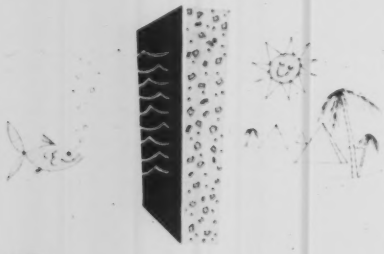
HALOID XEROX®

2 basic waterproofing needs

1 *reliable product*

Men who write waterproofing specifications insist upon *proved* products which they know will uphold their reputations. When they specify IRONITE WATERPROOFING, a metallic water resistant compound, they know that:

- IRONITE WATERPROOFING is not merely an outer coating
- Its fine particles are carried in suspension in water and thus actually work their way into any and all voids or cavities in the concrete, brick or other porous surfaces
- These particles then oxidize and expand to become a part of the mass to which the IRONITE WATERPROOFING is applied
- Cannot scale, blister, crack or peel
- IRONITE WATERPROOFING cannot be removed without the destruction of the underlying surface
- It has proved its ability to stand up indefinitely in some of the world's most famous buildings



2 *reliable application*

Experienced specifiers know that SKILLED APPLICATION is just as important as product competence!

IRONITE WATERPROOFING has been outstandingly successful in all types of industrial, commercial and institutional buildings for more than 50 years because it is applied *by licensed contractors & engineers* who are specialists in the solution of all types of waterproofing problems.

Send for details and information regarding the location of your nearest IRONITE *licensee. Write IRONITE COMPANY, Suite 729–208 South LaSalle St., Chicago 4, Ill.*

IRONITE COMPANY

® Registered Trademark

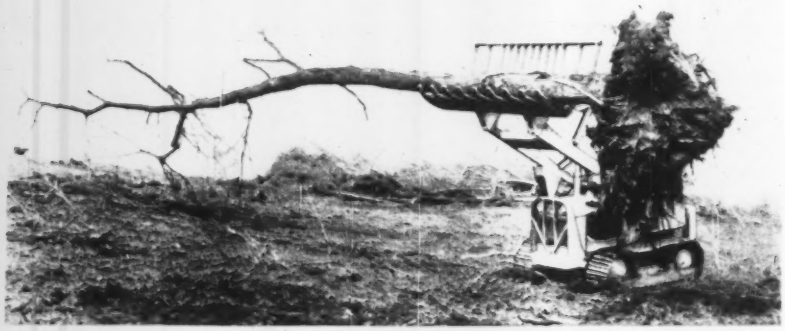
Quick crown adjustments are possible with . . .

No-Snag Device for Long Screeds

A built-in adjustable crown assembly is designed to prevent sag in long vibrating screeds. It can be set for any crown from straight to 3 in.

The assembly also makes it possible to use 40-ft-long screed beams in easily handled 20-ft sections.

The crown device, patent pending, is mounted in the center of the wooden beam. It has a cylinder around which the two halves of the beam pivot. To adjust the crown, bolts holding the two halves are loosened, the center of the beam is jacked and the bolt re-tightened. STOW MFG. CO., 19 SHEAR ST., BINGHAMTON, N. Y.



Uprooted tree is cradled on the teeth of . . .

A 'Rake' to Reap the Trees

A rake attachment for front-end loaders is designed for speedy land-clearing jobs. The "Shunk Winget" rakes out brush, hedgerows and trees with a minimum displacement of soil, the manufacturer states. The open teeth allow the soil to fall back in place.

To root out a tree, the operator first makes a pass along one side to cut the lateral roots. A return pass takes care of the other side.

The rake is then raised and used to push the tree over. Finally the tree is cradled on the rake teeth and hauled off. SHUNK MFG. CO., BUCYRUS, OHIO.

(*New Products continued* p. 100)

ALPHA

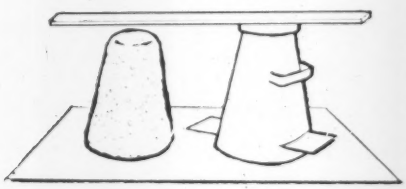
BETTER CONSTRUCTION THROUGH
BETTER USE OF CEMENTS

news and notes from the field

Rules of Thumb for Concrete Mixes

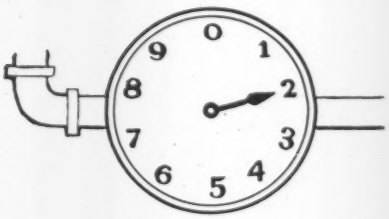
Here are five handy rules of thumb which can be used in making changes in concrete mixes. These are methods based on experience and practice, and are recommended for use only when engineering assistance is not readily available, and should be used for approximations only.

1. To increase slump



Add *one* gallon of water to *one* cubic yard of concrete to increase the slump about *one* inch.

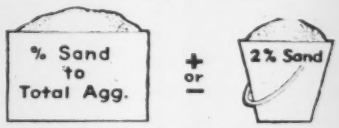
2. For constant yield when changing water content



For each gallon *increase* in water content, *subtract* 22 pounds of aggregate. For each gallon *decrease* in water content, *add* 22 pounds of aggregate.

If you would like additional copies of these "Rules of Thumb", ask your Alpha sales representative or write to Alpha Portland Cement Company, Easton, Pa.

3. Adjusting sand for cement change



Adjust sand when changing cement content in a mix. Roughly, 2% should be added to the percentage of sand-to-the-total-aggregate when one sack of cement is taken from a mix. Deduct 2% sand when adding one sack of cement.

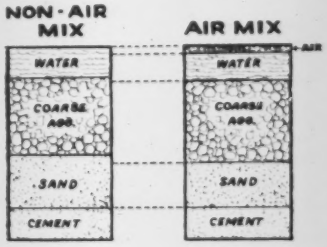
4. Harsh Mix

When a mix is unworkable and harsh, increase the sand 50 lbs. per cubic yard and decrease the stone or gravel 50 lbs. per cubic yard. If more sand is needed repeat again but always in 50 lb. increments. The workability of an oversanded mix can be adjusted the same way in reverse. Always check yield and strength after this rule-of-thumb has been used. (Alpha's Field Engineers are equipped to check concrete yield on the job.)

5. Changing from regular cement to air-entraining mix

To maintain the same cement factor when changing from a regular cement mix to an air-entraining mix:

For each 1% *entrained* air, reduce water ¼ gallon per sack of cement, and reduce sand 5 lbs. per sack of cement.



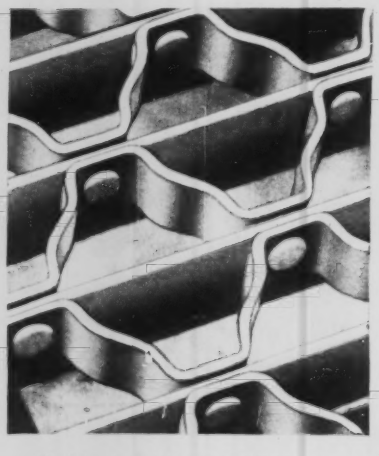
For rich mixes (air entrained), strength reductions should be expected. For lean mixes, there may be no strength reduction or possibly increased strength.

Alpha Cements for Two New Airports!

Over a half million barrels of Alpha Cement will be used for constructing the new Washington, D.C. International Airport at Chantilly, Va., and a new landing field at the Andrews Air Force Base near Washington, D.C.

ALPHA
PORTLAND CEMENT COMPANY
Alpha Building — Easton, Pa.

New "CK" BRIDGE DECKING ENDS WEAVING OF CARS



Modification of the original Irving Type V Decking has eliminated "weaving" on open mesh steel floors. The improvement is effected by a 3/16" elevation difference of the crimped bars over the straight bars.

"CK" Decking, successfully field-tested for 4 years, has the same advantages of safety, strength, durability and self-maintenance as standard Type V Decking

Write for Complete Information on New "CK" DECKING.

★

"A Fitting Grating for Every Purpose"

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IRVING SUBWAY GRATING CO., Inc.

Originators of the Grating Industry

Offices and Plants at
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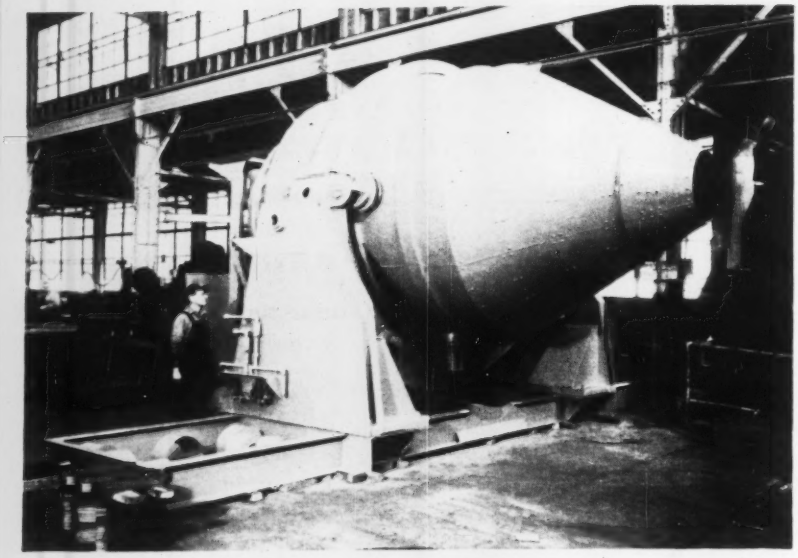
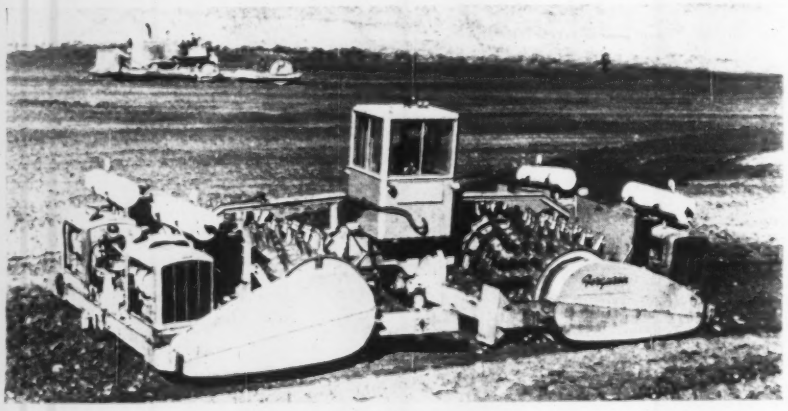


World's Largest Tilting Mixer

At 10-cu-yd capacity, the tilting mixer shown above is believed to be the world's largest. The giant mixer weighs 53,000 lb.

This mixer was built for a portable batching plant in Ohio. Three similar tilters are being built for construction of the new International Airport at Washington, D. C. T. L. Smith Co., Milwaukee, Wis.



Sheepsfoot Roller is 'Monster'

The "Monster" is a 120,000-lb sheepsfoot roller being used on the 29-million-cu-yd earthfill for Navajo Dam in New Mexico.

The self-propelled tamping roller consists of four drums, each 5 ft in diameter and 6 ft long. Each drum is driven by its own 100-hp diesel engine. All controls are from a central cab.

The drums are free to oscillate in every direction to follow undulations of the fill.

Operating speeds are from 2 to 6 mph. Gears are shifted simultaneously for all four units.

Two double-acting hydraulic cylinders between the front and rear units are used for steering. The roller operates equally well in either direction, so there is no need to turn around.

Basic weight of the "Monster" is 96,000 lb; ballasted with water, 120,000 lb. This comes out to 5,000 lb per ft of drum length. Shovel Supply Co., Dallas, Tex.

(New *Products* continued p. 102)

Some Ideas

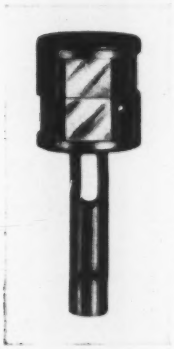
for your file of practical information on surveying from

KEUFFEL & ESSER CO.

An anonymous Persian once said: "Luck is infatuated with the efficient." In line with this bit of good, dry wisdom, we present five items that, in their measure, will step up surveying efficiency . . . by permitting faster work, by promoting greater accuracy, or by doing both. For example . . .

The New K&E Double Right Angle Prism

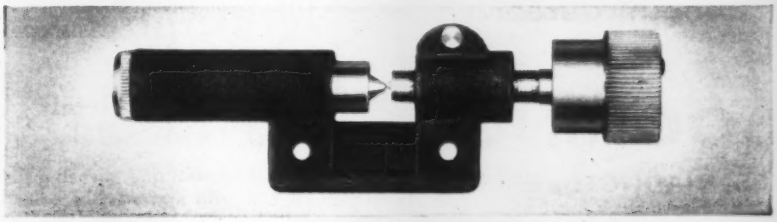
This simple, hand-held instrument belongs in every surveyor's kit. It bends the line of sight exactly 90° to left and right, so that you can quickly establish a right angle to your position between any two points – without the bother of setting up a transit. This can save you much time and effort when staking out small areas or laying out squares for contouring.



Objects straight ahead can be sighted clearly through a slot in the handle, even when they are at a steep angle above or below your position. Actually, the new Double Right Angle Prism is an improved edition of an earlier K&E model. Tests show that it's much more accurate. The prisms are much larger . . . points are picked up more quickly.

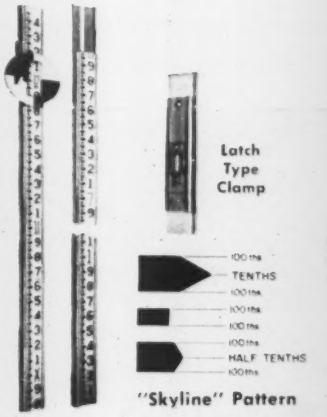
High and Low Gear Tangent Settings

Exact aiming and precise vernier settings are fast, smooth and easy with the new



K&E 2-Speed Tangent Screw. Its two sets of gears control rough adjustments separately, with one screw. Simply by reversing the tangent screw, you swing into "low gear" once the rough sighting has been made. Then, with the screw operating at a slower, finer ratio (4 to 1), you have firm, positive control of final settings. Hesitation and delay are eliminated, with considerable saving of time and temper for the whole field party.

The upper motion of every new K&E PARAGON® Transit is fitted with a 2-Speed Tangent Screw, as standard equipment. The new control may be specified for the other two motions as well. If you already have a PARAGON Transit (not more than 5 years old), you can order these time-savers individually, and install them yourself.



Rigid as a Steel Column

Here are two outstanding K&E features offered by the recently-developed Detroit Leveling Rod. The rod is made in three sections. Each of these is joined by an exclusive locking device – a latch-type clamp on a steel brace, drawing the sections together in rigid contact. When erected to its full 12.5-foot height, the Detroit Rod is as solid as one continuous bar. There is no wobbling or binding at the joints. Even habitual skeptics have called this "a revolutionary advance" over conventional locking methods. Another important feature: the new "Skyline" graduations, developed by K&E to make fast but accurate readings possible at greater distances, with less eyestrain. The distinctive pattern shows tenths of a foot, half tenths and hundredths – sharply on a clean, white background. Every Detroit Rod is furnished with a strong, mildew-resistant canvas bag, partitioned to hold the three sections. The bag is only 4'6" long.

New Tape Thermometer Snubs Air Temperature

On a winter afternoon, when the mercury can drop from a balmy 50° at noon to 20° at 4 pm, a 100 foot steel tape can shrink as much as 1/20 of a foot. A reliable tape thermometer assures accurate measurements by showing actual tape temperature – often 20 to 30° higher or lower than that of the air. K&E designed this new

tape thermometer so that the bulb may be *clamped* tightly against the tape surface. It reports the *tape's* temperature, not the air's. Above-zero readings appear in black, below-zero in red. The instrument complies with rigid Government specifications.

Red and Yellow and Seen All Over

For years, surveyors have protected life, limb and property by painting tripod legs in loud colors. Now, all K&E wide-framed tripods are available *pre-painted* in high-visibility yellow, with a bright red stripe. You can throw away your paint brush!

All these products may be seen and had at your nearest K&E dealer. Stop in and see them. Or simply clip and mail the coupon below . . .

KEUFFEL & ESSER CO., Dept. EN-5, Hoboken, N. J.

I'd like to know more about:

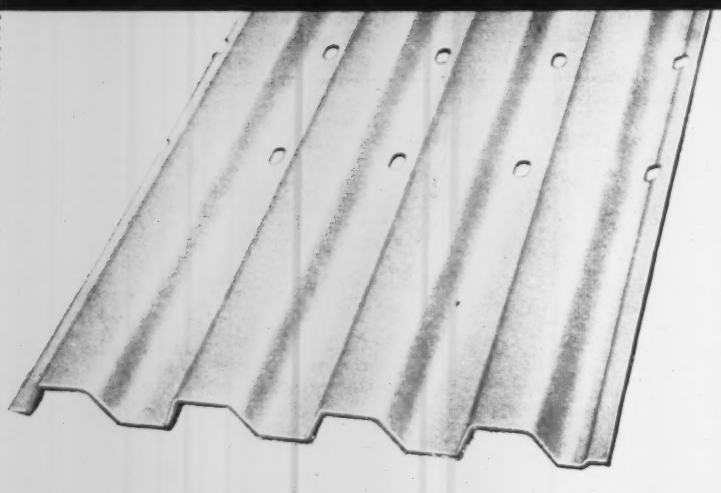
- ☐ K&E Double Right Angle Prism
- ☐ 2-Speed Tangent Screw
- ☐ New K&E Tape Thermometer
- ☐ Detroit Leveling Rod with "Skyline" Graduations
- ☐ New 2-Color Tripods

Name & Title_____

Company & Address_____

1624

U.S.F.



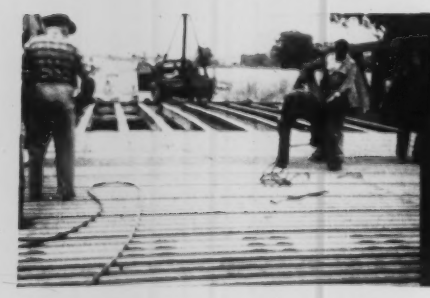
$$\frac{\$ \times m}{yr} = BF \text{ USF}$$

Figures prove that the dollars ($) spent in the maintenance (m) over a period of years (yr) in many cases are much greater than permanent improvement with the strength, durability and economy of USF

BRIDGE FLOORING

FOR BRIDGES, OVERPASSES, VIADUCTS, ETC.

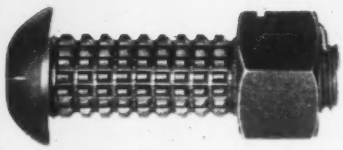
Complete details for building or rejuvenating are available by writing...



USF

UNITED STEEL FABRICATORS, INC.
WOOSTER, OHIO

Highway Guard Rail • Bridge Flooring
Steel Forms for Concrete Bridge Decks
Corrugated Metal Pipe • Window Wells
Metal Doors & Frames • Metal Buildings



Knurled Bolt with Lock Nut Works Without a Washer

Combining a knurled bolt with a self-locking nut takes care of erection problems wherever high clamping force isn't needed or can't be obtained, the manufacturer says.

It's not necessary to use torque wrenches on the assembly, particularly for tower erection. Here are the reasons:

First, the under side of the head of the "High-Tensile Structural Rib Bolt" is tapered, so that greatest bearing is near the outside of the head. This, it is claimed, helps divert stresses in the structural members away from the bolt hole. And the relatively hard, front-tapered knurls make the bolt easy to drive. They burnish grooves in the connection holes, but don't peel while being driven. This prevents any packing of material under the bolt head.

Also, the bolts are in bearing when installed, even before the joint is loaded. The "interrupted ribs" fill the connection hole to create a joint in initial bearing. Drawing up the Anco lock nut until it's tight is all that's necessary. The maker says it won't work loose, regardless of vibration.

The Anco ribbed bolt and self-locking nut meet ASTM Spec A-325. Both can be supplied in galvanized finish to meet ASTM Spec A-153. Automatic Nut Co., Lebanon, Pa.

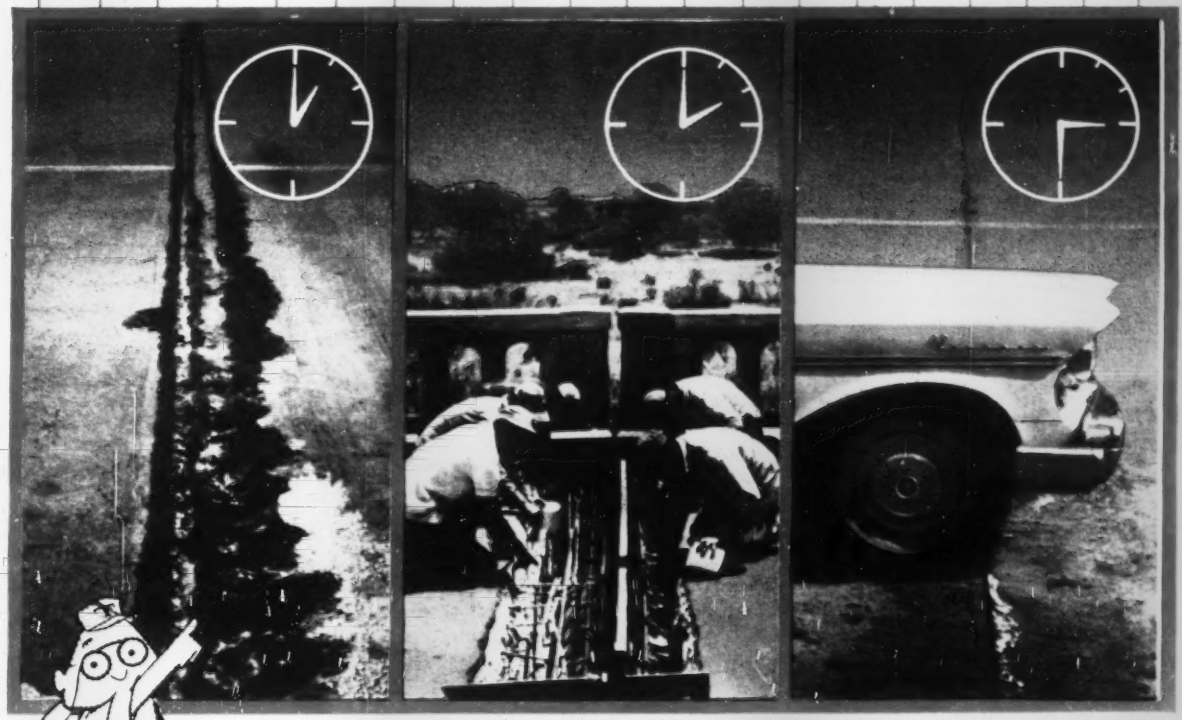
Pipe Made of New Metal Bends and Twists Safely

A new metal combining the characteristics of cast iron and steel is being produced in pipe, tubing, casing, fittings and special castings. Called American Ductile Iron, it is a product of the American Cast Iron Pipe Company.

It is recommended for water and gas mains where high pressures, heavy loads, unusual stresses or unstable bedding may be encountered. According to the manufacturer, pipe made of the new metal will bend and twist without breaking. Also available for this pipe are a variety of joints said to be "bottle tight." American Cast Iron Pipe Co., Box 2603, Birmingham 2, Ala.

(*New Products continued* p. 106)

REPORTS *on concrete bonding with* THIOKOL *LP/Epoxy compounds*



#2 REPAIRING ROAD BREAKS *without causing* BOTTLENECKS

Truly the Achille's Heel of the Highway, spalled expansion joints are a frequent source of road failure throughout the country. Their complete repair by conventional methods generally requires several days, causes hazardous traffic squeezes or inconvenient re-routing.

Many states have found a happy solution to the problem by substituting a THIOKOL liquid polymer epoxy resin compound for portland cement in remedial work. As pictured above, a spalled expansion joint has been laid bare, the THIOKOL LP epoxy concrete installed, and the roadway is back in operation in 2½ hours! A job ordinarily taking 3 days! This particular repair was done several years ago and has served perfectly ever since.

Again and again, over a six year period, THIOKOL LP epoxy compounds have proven their enormous adhesive strength in bonding old-to-old and new-to-old concrete. Repairs made with this material . . . such as patching pot holes, overlaying scaled areas, filling cracks, replacing broken slabs . . . have stood the test of time and wear on well-travelled roads in several states and climates.

It will pay you to find out how THIOKOL takes to the road—easily, quickly and economically. Coupon brings the whole story.

Thiokol®

CHEMICAL CORPORATION

780 NORTH CLINTON AVENUE • TRENTON 7, NEW JERSEY

In Canada: Naugatuck Chemicals Division, Dominion Rubber Co., Elmira, Ontario

®Registered trademark of the Thiokol Chemical Corporation for its liquid polymers, rocket propellants, plasticizers and other chemical products

FOR MORE INFORMATION: Mail coupon to Dept. 51, Thiokol Chemical Corp., 780 N. Clinton Ave., Trenton, N. J.

Gentlemen: Please send me available data on THIOKOL LP Epoxy adhesives for concrete repair.

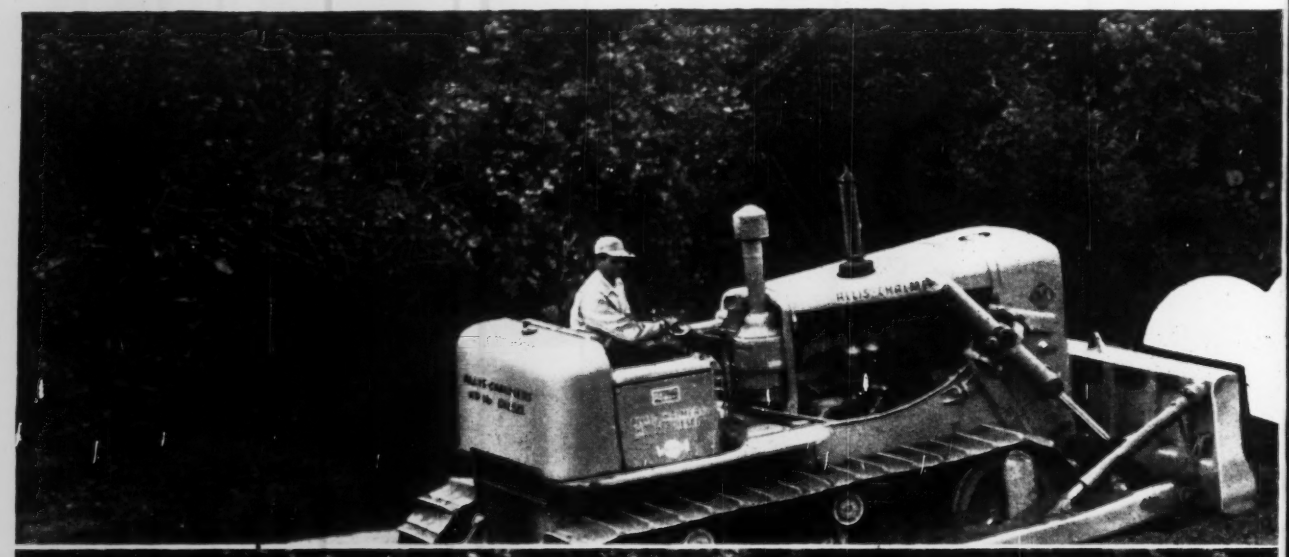
Firm_____

Street_____

City_____ State_____

Your Name_____

Same cut... same pusher
5% more dirt in 42% less time

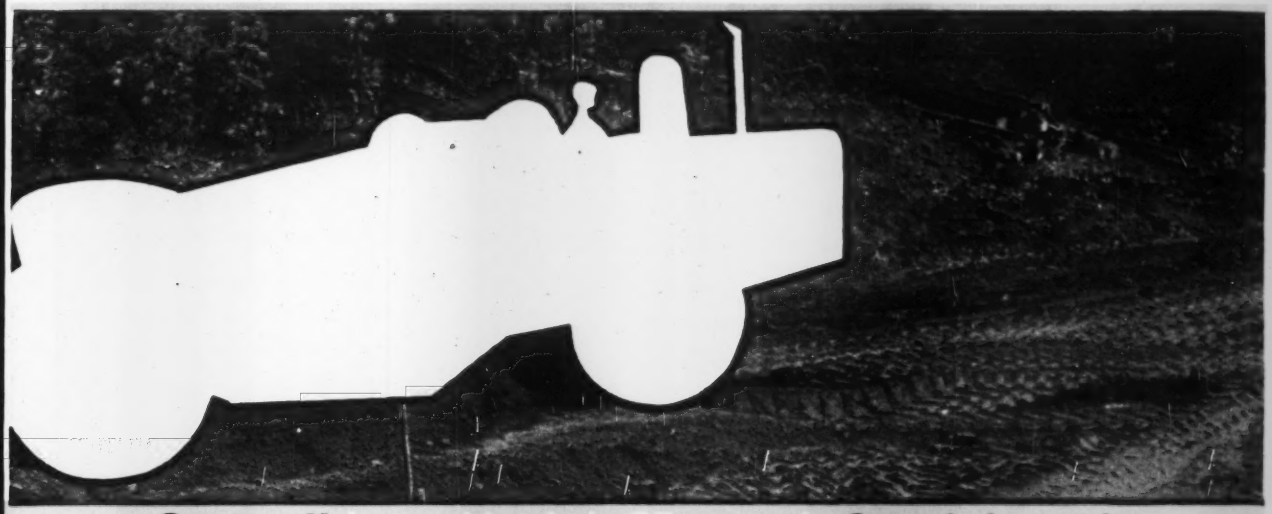


You may be surprised . . . may even challenge these facts. But facts they are, and we invite you to check them on *your* job, with *your* stop watch. Call your nearby Allis-Chalmers dealer now. He'll provide the TS-160 . . . when and where you say. *Allis-Chalmers, Construction Machinery Division, Milwaukee 1, Wisconsin.*

.....move ahead with **ALLIS-CHALMERS** ...

DAY IN...DAY OUT, THIS ALLIS-CHALMERS 9½-YARD TS-160 OUTWORKS ITS LEADING COMPETITOR...AND DELIGHTS ITS OWNER*

This is no demonstration setup. It's a road job* where these two self-propelled scrapers worked every day . . . push-loaded by the same Allis-Chalmers HD-16 torque converter tractor. That made every loading cycle about as identical as they'll ever get. And hour after hour, the TS-160 moved out of the cut with a heaped load in an average of 42% less time than its 9-yard companion of another make. *This is extra work power you can turn into profit!*



Scraper X, heaped loads in 38 seconds, 9 yards heaped

TS-160, heaped loads in 20 seconds, 9½ yards heaped

* Further details on request

A-C ALLIS-CHALMERS

power for a growing world

when the going gets rough—

give 'em "L"

When the bite is on the dragline, you'll be glad you rigged with *Leschen*—the wire rope that's the same top quality in every foot of every reel. The new Leschen wire mill is designed to deliver exactly that. New machines . . . new processes . . . exclusive new continuous-flow technique—all as modern as tomorrow. Try Leschen Red-Strand Wire Rope now and see how its uniform quality makes your operation safer, your replacement time farther in the future. Make your next order Leschen! *Leschen Wire Rope Division, H. K. Porter Company, Inc., St. Louis 12, Mo.*

LESCHEN WIRE ROPE DIVISION

H.K. PORTER COMPANY, INC.

DIVISIONS: Connors Steel, Delta-Star Electric, Disston, Forge & Fittings, Leschen Wire Rope, Mouldings, National Electric, Refractories, Riverside Alloy Metal, Thermoid, Vulcan-Kidd Steel, H. K. Porter Company (Canada) Ltd.

Aluminum Ladder Rungs Lock in Place for Safety

A new rung-to-rail construction makes the Louisville Colonel Ladder safer than conventionally assembled ladders, the maker says.

Available in either straight or extension style, the budget-priced industrial ladder features a new "Oval-Lok" rung joint. An oval side-rail hole makes rung twisting practically impossible. And the rung is crimped before assembly and double-crimped afterwards.

The double crimp prevents the rung from pulling out of the side rail and reinforces the rung against collapsing, the manufacturer claims. Louisville Ladder Co., Louisville, Ky.

Briefs . . .

• **Apron feeder**—A 30-ft-long portable apron feeder for handling quarry rock and boulders has a hopper of 1-in. steel plate running its full length. Overlapping, corrugated pans reduce slippage and fines leakage. The 45,000-lb feeder is transported on dual tandem rear wheels. Power requirement is 25 hp. Pioneer Engineering Div., Poor & Co., Inc., Minneapolis 14, Minn.

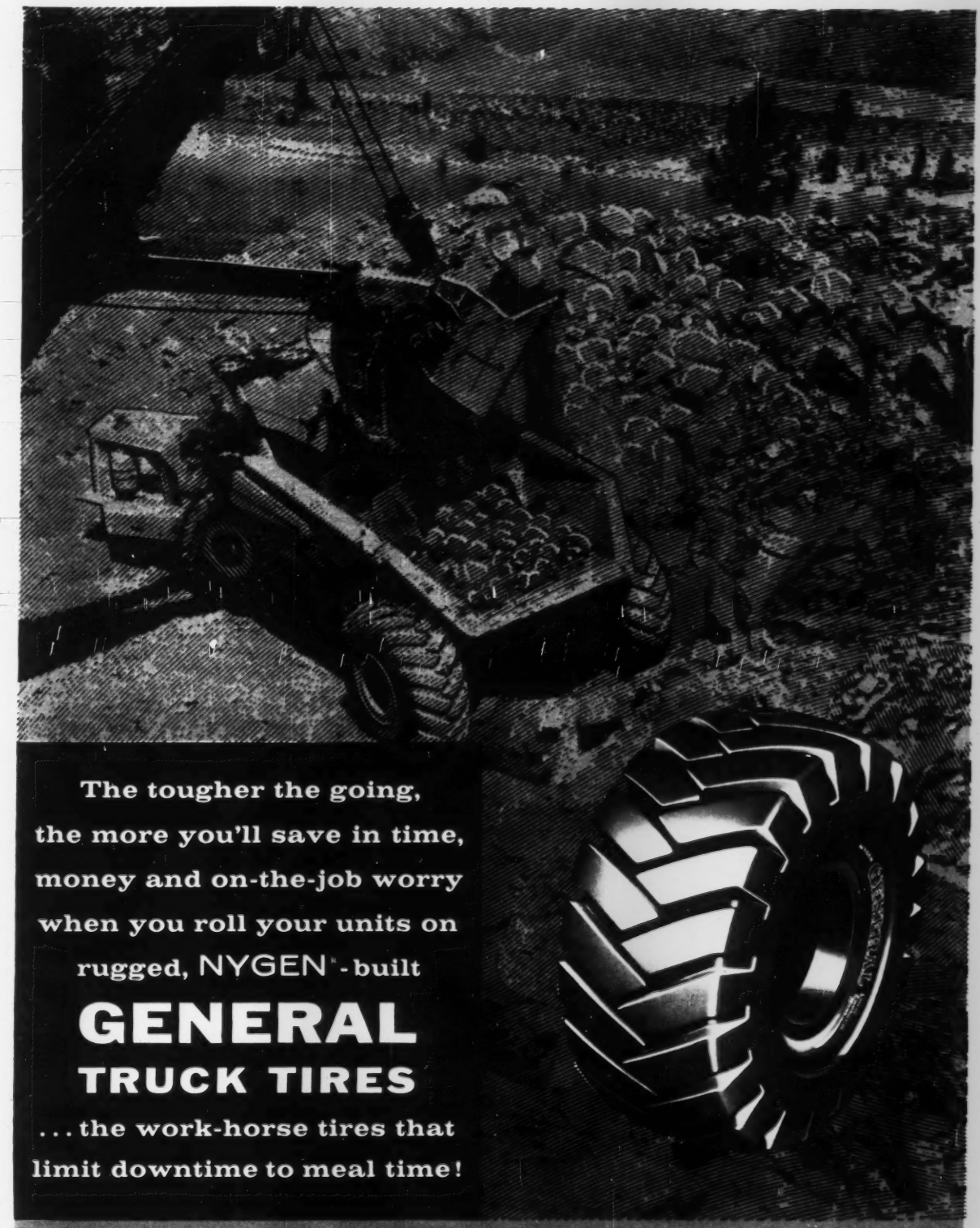
• **Air compressor**—The Worthington 125 cfm power take-off compressor has been modified to include a chain drive and clutch. The unit has a two-stage oil-cooled rotary compressor, speed control engine governor, oil cooler, air receiver, oil separator and oil storage receiver, all mounted on a common base. Worthington Corp., Harrison, N. J.

• **Winch**—Designed for pipeline work, the Hyster D7D Lo-Speed winch has a maximum line pull of 85,000 lb and a minimum line speed of 37 fpm. It is produced as a matching piece of equipment for the Caterpillar D7 tractor. Hyster Co., 2902 N. E. Clackamas St., Portland 8, Ore.

• **Lift truck**—The Allis-Chalmers 2,000-lb lift truck is now being produced in a pneumatic tired model, the LTP 20-24. It is powered by a 4-cylinder engine available in gasoline or LP fuel models. Maximum stacking height is 131½ in. with an over-all lowered height of 83 in. and a 161 in. free lift. Outside turning radius is 70 in. Allis-Chalmers Manufacturing Co., Milwaukee, Wis.

• **Door hardware**—A new line of hardware sets interior doors over openings rather than in them, cutting carpentry cost for home builders. Stanley Works, New Britain, Conn.

(*New Products continued p. 108*)


The tougher the going,
the more you'll save in time,
money and on-the-job worry
when you roll your units on
rugged, NYGEN®-built
GENERAL
TRUCK TIRES
...the work-horse tires that
limit downtime to meal time!
Specify GENERALS on your new equipment
THE GENERAL TIRE & RUBBER COMPANY, AKRON, OHIO

Schramm Portable 125 Compressor gives any contractor a real break on initial cost—and on operation, too. Reason: modern, economy-loaded piston design. Gives more power, uses less fuel. Available: **gasoline or diesel.**

CONTRACTORS WHO WANT TO CUT OPERATING COSTS:

Save up to $1700 on Schramm 125 Compressors

Why pay more than necessary for a 125 cfm air compressor? Schramm gives you the lowest initial cost of any compressor manufacturer—plus additional cost savings in operation and repair. However, this lower cost is *not* from price slashing or quality cutting shortcuts, but is the result of lower manufacturing costs inherent in the production of piston-type compressors. It's a fact—you get superior quality at lower cost from the simplified design which can be manufactured more economically.

You also get increased savings with . . .

Lower fuel consumption Schramm Model 125 uses from 15% to 50% less fuel than competitive air compressors. Yet it delivers more power . . . a full 125 cfm of air, not just a fraction of it.

Less Maintenance Operating features of piston-type design provide more fool-proof operation, result in less downtime. Any mechanic can easily service without special training.

Fewer and Less Costly Replacement Parts 90% of the wearing parts between engine and compressor are interchangeable, fewer parts to replace. Replacement parts also cost less—as much as one-seventh of competitive parts.

Don't spend one cent extra for any size compressor until you can investigate *all* the facts. See your local Schramm Dealer, or write today for your copy of Bulletin SPB-58.

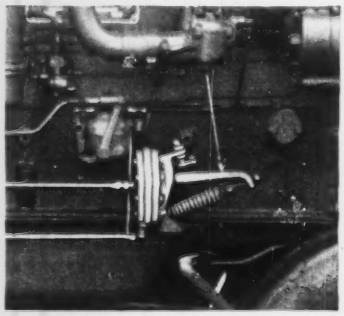
See the Yellow Pages for local Sales, Service and Rental of Schramm Air Compressors.

Schramm, Inc.

MANUFACTURERS OF AIR COMPRESSORS

620 North Garfield Ave. • West Chester, Pa.

Schramm Portable 125 powers two pneumatic tools with *full* 125 cfm of air . . . produces full rated power—increases workers' efficiency.



Automatic air control is a feature of Schramm Compressors. The patented Schramm Pneumatat controls speed of each unit without operator manipulation. Engine operates from idle to full speed according to air demand.

. . . New Products

• **Fueling-defueling valve**—The 6 x 3 FDF valve is said to offer less than 0.3 psi friction loss at a fueling rate of 600 gpm or defueling rate of 150 gpm. It weighs 30 lb. It measures 11 in. across flanges and 10¾ in. in height. GORMAN-RUPP CO., MANSFIELD, OHIO.

• **Truck tires**—The use of steel cord instead of textile cords in reinforcing this new tire is said to eliminate flexing of treads in road contact, and tire "growth" and reduce bruise breaks and punctures. These tires are of the tube type and made for heavy duty trucks. B. F. GOODRICH TIRE CO., AKRON, OHIO.

• **Lift-truck accumulator**—Attached to the main hydraulic cylinder of a lift truck, bucket loader or other hydraulically operated truck, this accumulator is said to absorb shocks, vibrations and jolts. SPECIAL PRODUCTS CO., 15000 W. 44TH AVE., GOLDEN, COLO.

• **Portable Magnaflux kit**—"Zyglo" inspection equipment is now available in a light, portable kit, particularly suited for service shop work. MAGNAFLUX CORPORATION, 7300 WEST LAWRENCE AVE., CHICAGO 31, ILL.

• **Power take-off pump**—The 06C-G, a self priming centrifugal pump driven directly from a vehicle drive shaft, is said to deliver 600 gpm at 100 psi when operating at 70% efficiency. GORMAN-RUPP CO., MANSFIELD, OHIO.

• **Traxcavator cabs**—Designed for Caterpillar Traxcavator models 977, 955 and 933, Crenlo cabs are said to be easy to install or remove. All starting operations can be performed within the cab. Windshields are vertical and body panels are of 12-gage steel. CRENLO, INC., 1600 N.W. 4TH AVE., ROCHESTER, MINN.

• **Backhoe**—The Davis 220 backhoe can be moved to any of five positions along its mounting frame in less than five minutes. Operators seat moves with digging assembly for improved vision. The unit has operating pressure up to 2,150 psi and a breakaway power up to 14,000 lb. MASSEY-FERGUSON INDUSTRIAL DIVISION, 1009 SOUTH WEST ST., WICHITA, KAN.

• **Crawler-drill-jumbo**—Designed for use in tunnel or contract work, the jumbo can be mounted with one or two jobs for single or multiple hole drilling. One man can operate the unit. MACHINERY CENTER, INC., 1201 S. 6TH WEST ST., SALT LAKE CITY, UTAH.

(*New Products continued p. 110*)

"I bought another Sherman Digger because . . .

. . . competition is rough! To protect my business, I've got to have fast, maneuverable and trouble-free rigs that out-perform anyone else's. That's why I own two Sherman Power Diggers now and why, at one time or another, I have owned six Shermans. Performance is a must in my work—I get it with Sherman!"

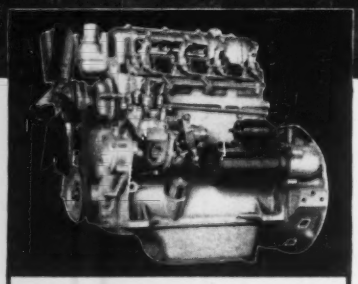
CARL DIEM
Diem Septic Tank Installers, Flint, Mich.

Sherman units purchased from Otto P. Graff Tractor Sales, Flint, Michigan

SHERMAN S PRODUCTS

POWER DIGGERS • LOADERS • SOIL WORKING TOOLS • FORK LIFTS
CRANES and EXCAVATORS • FOUR-WHEEL DRIVES

SHERMAN PRODUCTS, INC., Royal Oak, Michigan



Waukesha Model 180-DLC Diesel—144 cubic inch., four-cylinder, 3½-in. bore x 3¾-in. stroke, counterbalanced crankshaft.

START *at the top* AND WORK DOWN

WAUKESHA *Diesel*

powers this

PAYLOADER®

When demolishing a multi-story, block long storage warehouse in New York City, the Cleveland Wrecking Company's *Payloaders* were taken to the top floor. From there they bulldozed, loaded and dumped all kinds of brick and rubble through floor hatchways down into the basement for later removal.

Pictured on the job is front-wheel drive, rear-wheel steer Model HA *Payloader* powered with a Model 180-DLC Waukesha Diesel—an engine with the lively acceleration and quick pick-up that gives tractor-shovel speed, flexibility, and all-around versatility, particularly in shorter turning. Model HA *Payloader* lifts 3000 lb. and carries 2000 lb. Its powerful 40-degree bucket tip-back has 3100 lb. of breakout force for prying out loads of heavy and lumpy materials. Its 180-DLC Waukesha Diesel is shown here; but it is also available with a Waukesha Model FC Gasoline Engine. Get Engine Bulletins 1626 and 846.

408

WAUKESHA MOTOR COMPANY, WAUKESHA, WISCONSIN

NEW YORK TULSA LOS ANGELES

Factories—Waukesha, Wisconsin, and Clinton, Iowa

. . . New Products

• **Concrete form coat**—Poly-Kote FG-54 is a viscous concentrate packaged in one gallon cans; add it to 54 gal of any grade fuel oil, without mixing machinery, and the result is 55 gal of form coating, ready for use. BRAD CHEMICAL CO., 111 WEST WASHINGTON ST., CHICAGO, ILL.

• **Right-angle grinder**—Newly developed line of right-angle head grinders is now being produced by Gaston Power Tool Co. The grinders are available in 1, 1½ and 2 hp 3-phase electric motor ratings. The power units are designed to deliver a constant 3,400 rpm under load. FLINN & DRELLEIN ENGINEERING CO., CHICAGO, ILL.

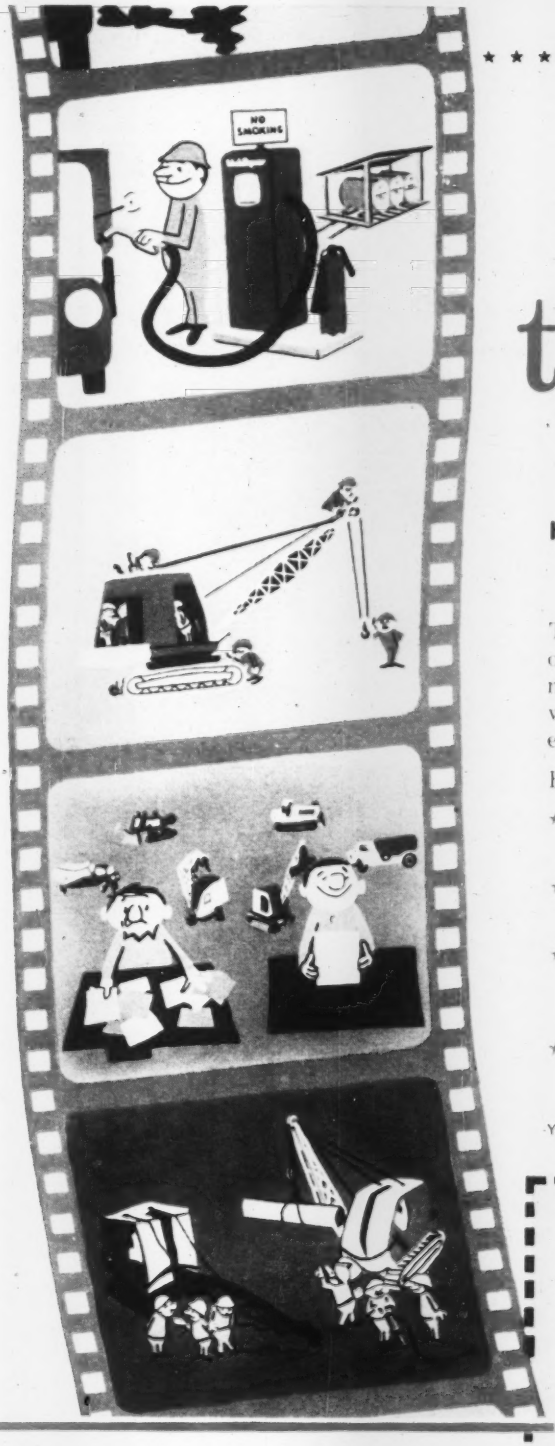
• **Standby power sources**—Equipped for remote starting, the new Model 35RSI electric plant produced by Kohler Co. is a 35kw, 120/208 volt ac unit run by a gasoline engine rated at 92 hp. The new unit includes low oil pressure and high water temperature safety devices adding to its usefulness as a remote operation plant. KOHLER COMPANY, KOHLER, WIS.

• **Folding scaffold**—The Fold-a-Way Scaffold may be collapsed without dismantling to go through narrow doors and hallways. Adjustable for heights of 1½ to 7½ ft, the scaffold may be expanded from a platform size of 5 x 10 ft up to 40 x 40 ft and larger, if required. SUPERIOR SCAFFOLD CO., 5624 BANKFIELD AVE., CULVER CITY, CALIF.

• **Power saw**—The Super Rebel is a light power saw with a reciprocating solid blade. The producer says that, in addition to the dependability of the reciprocating blade, the unit features a safety device that automatically shuts off the gasoline engine if the 25 lb saw is dropped or released. THOMAS INDUSTRIES, INC., 410 SOUTH THIRD ST., LOUISVILLE 2, KY.

• **Fastening tool**—A new powder-actuated fastening tool called Flite-Chek will stop an overdriven fastener in its tracks. The tool uses the same type of powder loads and threaded stud fasteners as the standard Ramset powder-actuated equipment. OLIN MATHIESON CHEMICAL CO., 460 PARK AVE., NEW YORK 22, N. Y.

• **Trowelling machine**—The "Instant Trowel" gasoline-engine-powered unit features a combination blade for both floating and finishing of concrete. The three and four-blade machines are available in 32 and 42 in. dia sizes. COOK BROS. EQUIPMENT CO., 3334 SAN FERNANDO ROAD, LOS ANGELES 65, CALIF.



★★★★★ **SEE IT NOW!** ★★★★

"You're the Doctor"

New Mobil Color Film Shows You How Modern PM and Safety Methods Can Help Increase Your Profits!

This entertaining and informative film covers a number of important steps you can take to help improve equipment performance, raise job profits. It was produced with the technical cooperation of The Associated General Contractors of America, Inc.

Here are just a few of the film's highlights:

- ★ How to keep your equipment in top condition at all times with minimum paperwork.
- ★ Safety measures you can adopt to help cut down accident rates.
- ★ Timely tips to help eliminate breakdowns that cause excessive shop time and frequent replacement of costly parts.
- ★ An effective, practical way of simplifying your Preventive Maintenance.

Your Socony Mobil representative will be glad to show you this great new film at your convenience. Just fill in and mail this coupon:

Advertising Dept., Mobil Oil Co., Inc.
150 East 42nd St., New York 17, N.Y.

Yes, I'd like to see the new PM and Safety film, "You're the Doctor."

NAME_____

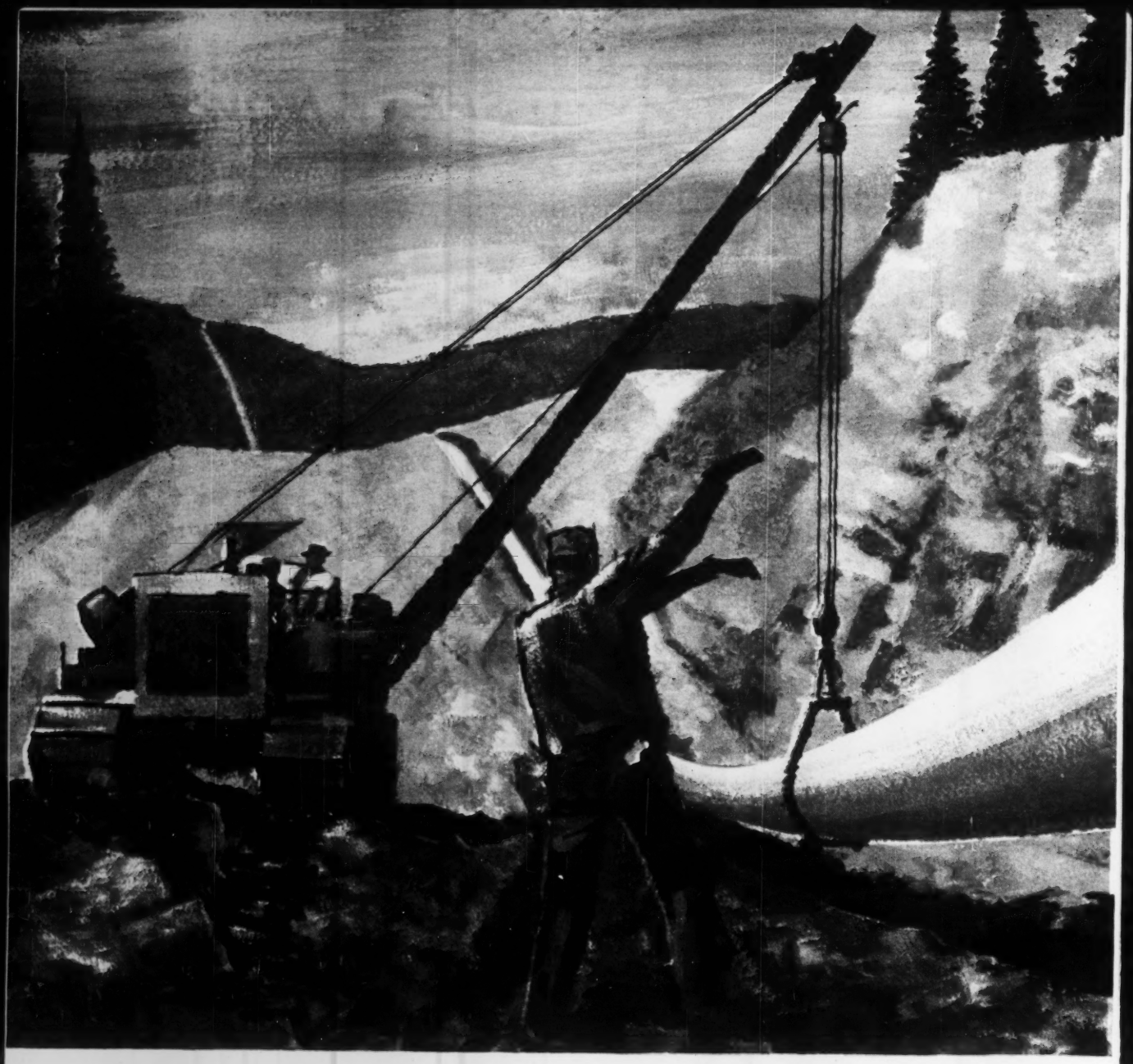
ADDRESS_____

COMPANY_____

Mobil *Correct Lubrication*

Tune in "TRACKDOWN" every week, CBS-TV. See your local paper for time and station.

Another reason you're Miles Ahead with Mobil



Putting the Laurel to bed

That's The Laurel Pipe Line! *Recently completed, this 440-mile line is the first to use 24-inch-diameter pipe in a major cross-country refined products system.*

Gasoline and other petroleum products will be transported through the line from Delaware River Valley refining centers to inland marketing areas such as Reading, Harrisburg, Pittsburgh and Cleveland.

National Tube supplied the pipe for the Laurel Line—approximately 66,000 tons of USS National Seamless and Electric Weld Line Pipe in sizes 24" O.D. to 14" O.D. for the main line and 9,000 tons for feeder lines, take-offs, and terminal facilities.

The eastern section of the main line, some 135 miles, is 24" diameter, API 5L X-52 pipe, ranging from .281 to .375-inch wall thickness. Initially, the line's throughput is expected to be about 100,000 barrels a day; however, this can be increased to 300,000 barrels with additional pumping stations. This line will make a greater variety of refined products available, in increased quantities, at a considerably lower transportation cost.

The Laurel Pipe Line represents another first for USS National Line Pipe. Why is USS National consistently chosen for rugged line pipe assignments? The answer in a word: *Performance*. You see, National Line Pipe combines the qualities of strength and dependability to give you a better product. Remember, too, that National Line Pipe is available in a complete range of wall thicknesses, steel analyses and in diameters up to 26 inches in Seamless and up to 36 inches in Electric Weld. For more information, write to National Tube Division, United States Steel, 525 William Penn Place, Pittsburgh 30, Pa.

USS and National are registered trademarks

National Tube Division of USS United States Steel

Columbia-Geneva Steel Division, San Francisco, Pacific Coast Distributors
United States Steel Export Company, New York

How to Install Rock Bolts

These are the four easy steps when you install the Bethlehem wedge-type rock bolt. The 1-in. diam slotted bolt locks itself into the rock formation, anchoring the rock layers so tightly that it is virtually impossible for serious rock slides to endanger traffic.

In addition to the wedge-type bolt, Bethlehem also makes a $\frac{3}{4}$-in. diam headed bolt, used with an expansion shell. Both bolts are easy to install, and provide positive locking action.

If you would like to know more about the use of Bethlehem rock bolts in minimizing danger from rock slides, our engineering staff is at your service. Just drop a line to the nearest Bethlehem sales office.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. Export Distributor: Bethlehem Steel Export Corporation

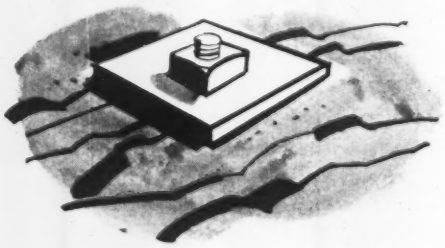
BETHLEHEM STEEL

BETHLEHEM STEEL

1 Wedge is inserted in slotted end of rock bolt. The $1\frac{1}{4}$-in. hole has been drilled previously, to depth 3 in. less than length of bolt.

2 Bolt is inserted through opening in steel anchor plate (rock anchor tie and plate may be used instead), then placed in the hole.

3 Bolt can be driven by same equipment used in boring hole. Dolly protects threads. Wedge drives deep into bolt, spreading slotted portion. Impact wrench is used in tightening nut.



4 With the nut drawn up tightly, the steel anchor plate bears against the rock surface, providing additional support.

U. S. Statistical Expert Advises Chilean Builders

Frank Piovia, an expert on statistical systems applicable to construction, has been in Chile as an adviser to the Chilean Chamber of Construction and the Chilean Steel Institute.

His consulting excursion, under auspices of the International Cooperation Administration, will take him also to San Juan, Puerto Rico, where he will advise the government on certain statistical operations.

Dominion Bridge Sets Up New Operational Control

Dominion Bridge Co., Ltd., Montreal, Canada, has instituted a new regional method of operational control.

Four new regions, known as the Eastern, Ontario, Central and Western regions will be controlled by a regional vice president operating from the Montreal head office. These replace the divisions, previously controlled by resident divisional vice presidents.

A number of special head office service groups have also been set up. And three country-wide product divisions—the warehouse, boiler and mechanical divisions—have been formed.

Changes are designed to improve the company's over-all facilities and to provide for greater decentralization on the branch and operating levels.

Vice presidents for the new regions are: P. E. Savage for the Eastern region, MacKenzie McMurray for the Ontario Region; E. A. Ford for the Central and R. J. A. Fricker for the Western Region.

Screvane Will Represent APWA at Holland Meeting

New York City's sanitation commissioner, Paul R. Screvane, will represent the American Public Works Association at a forthcoming meeting in the Netherlands of the International Committees for the International Association of Public Cleansing.

The meeting will be held in Scheveningen. Mr. Screvane will also visit Italy as the guest of the Italian Ministry of Foreign Affairs. While in Rome he will discuss mutual sanitation problems with his counterpart in the Italian Ministry of Public Health.

Careers

Business

John B. Newell, chief engineer of Kansas City Bridge Co., Kansas City, Mo., has been elected a vice president of the company and a member of its board of directors.

William P. Rus has resigned from Utah Construction Co., Salt Lake City, to form his own construction company, William P. Rus, Inc., in Palo Alto, Calif.

Ernest K. Bloss has been named director of research and development of the Boston & Maine Railroad, Boston. He has been an employee of the line since 1926. **John E. Rourke,** who joined the line in 1951 as a chairman has been appointed assistant director of research and development.

Lloyd E. Cooper has been appointed vice president and chief engineer of California-Pacific Utilities Co., San Francisco.

J. George Thon, formerly chief civil engineer of the Bechtel Corporation's power and industrial division has been named manager of hydro engineering, with responsibility for all design engineering on hydro projects. He is succeeded by **Leslie A. Irvin,** former assistant chief engineer.

Wallace J. Beckman and **Edward T. Davel** have become associates in the engineering firm of Consoer, Townsend and Associates, Chicago.

Desso T. Mitchell, Franklin County, Ohio, sanitary engineer has joined the Columbus engineering firm of Jennings-Lawrence Company.

Coleman R. Sample, vice president of Ford Bacon & Davis, Inc., has been elected a director of the firm and its subsidiary construction corporation. **George O. Phillips,** vice president of Ford Bacon & Davis Canada Ltd., has been elected a director of the firm.

(*Men and Jobs continued p. 116*)

Sound Powered Telephones

for tunnels bridges highways and similar arteries

Help to keep traffic rolling . . . to ease tie-ups . . . to report changing conditions.

NEED NO CURRENT

Theses phones provide positive communication at all times without the use of batteries or other outside sources of current. Operate with unusual clarity over a distance of many miles. In outdoor or indoor models,—in standard systems or those altered to your specifications.

Send for illustrated catalog

HOSE-McCANN TELEPHONE CO., INC.

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These Laykold® Products Keep Walls and Slabs DRY!

ASPHALT SPECIALTIES

Laykold Waterproofing is spray applied to concrete foundation wall of major structure in the Kaiser Center, Oakland, California.

LAYKOLD WATERPROOFING...

for fast, economical "first-line" protection. Laykold® Waterproofing* is a specially-compounded asphalt emulsion for cold, external application on concrete or masonry walls. Put on by brush or spray ahead of backfills, it provides resistance to moisture and dampness.

Hydropel Admix was used to prolong the life of piles, caps and deck slabs, "Long Wharf", Standard Oil Company of California.

HYDROPEL INTEGRAL ADMIX...

a unique type of asphalt emulsion for waterproofing* concrete used in walls, slabs, footings, etc. for industrial, marine or other construction.

Whenever moist conditions, freeze-thaw cycles, the presence of alkaline or neutral salts require the absolute minimum of moisture absorption, always specify Hydropel®. It cuts capillary water absorption by 80 per cent.

Waterproofing and Hydropel are only two of the famous Laykold line of asphaltic products available to the construction industry. Call or write our nearest office today for full information.

*The limitations of any product for waterproofing any type of surface for any definite length of time are clearly recognized, as covered by the Trade Practice Rules for the Masonry Industry, effective 8-31-46 by the Federal Trade Commission.

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320 MARKET, SAN FRANCISCO 20, CALIF.
Perth Amboy, N. J.
Baltimore 3, Md.
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Atlanta 8, Ga.
Mobile, Ala.
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Tucson, Ariz.
Portland 8, Ore.
Oakland 1, Calif.
Inglewood, Calif.
San Juan 23, P. R.

BITUMULS Emulsified Asphalts • CHEVRON Paving Asphalts • LAYKOLD Asphalt Specialties

Earl W. Homan and **Richard D. Lawrence** have formed Homan & Lawrence Engineering Co., San Francisco, Calif. They will engage in industrial engineering and construction work connected with the grain and milling industries.

W. D. LaDue, who supervised construction of Goodyear Tire & Rubber Co. plants around the world, has retired. In his 42 years with the company he had charge of building 18 new plants, including 10 in England, Argentina, Brazil, Java, Sweden, Columbia, Venezuela and Mexico.

J. F. Baier has been named vice president in charge of engineering for Arthur G. McKee & Co., Cleveland engineering and construction firm. He had been chief engineer of the division since 1952.

Ralph Cutler has been named vice president of Yuba Consolidated Industries, Inc., San Francisco, Calif., and general manager of Southwest Welding and Manufacturing Division, Alhambra, Calif. He was formerly manager of engineering and estimating for the fabricating division of Kaiser Steel Corp.

N. Olaf Nielsen, recently returned from an assignment in Pakistan, and **Ronald D. Bernard**, formerly with the U. S. Coast and Geodetic Survey, have joined the engineering staff of Cornell, Howland, Hayes & Merryfield, Corvallis, Ore., consulting engineering firm.

Alfred K. Allen has been named special vice president of Utah Construction Co. of San Francisco. He has been with Utah Construction Division for a year. Before that he was chief engineer of the company.

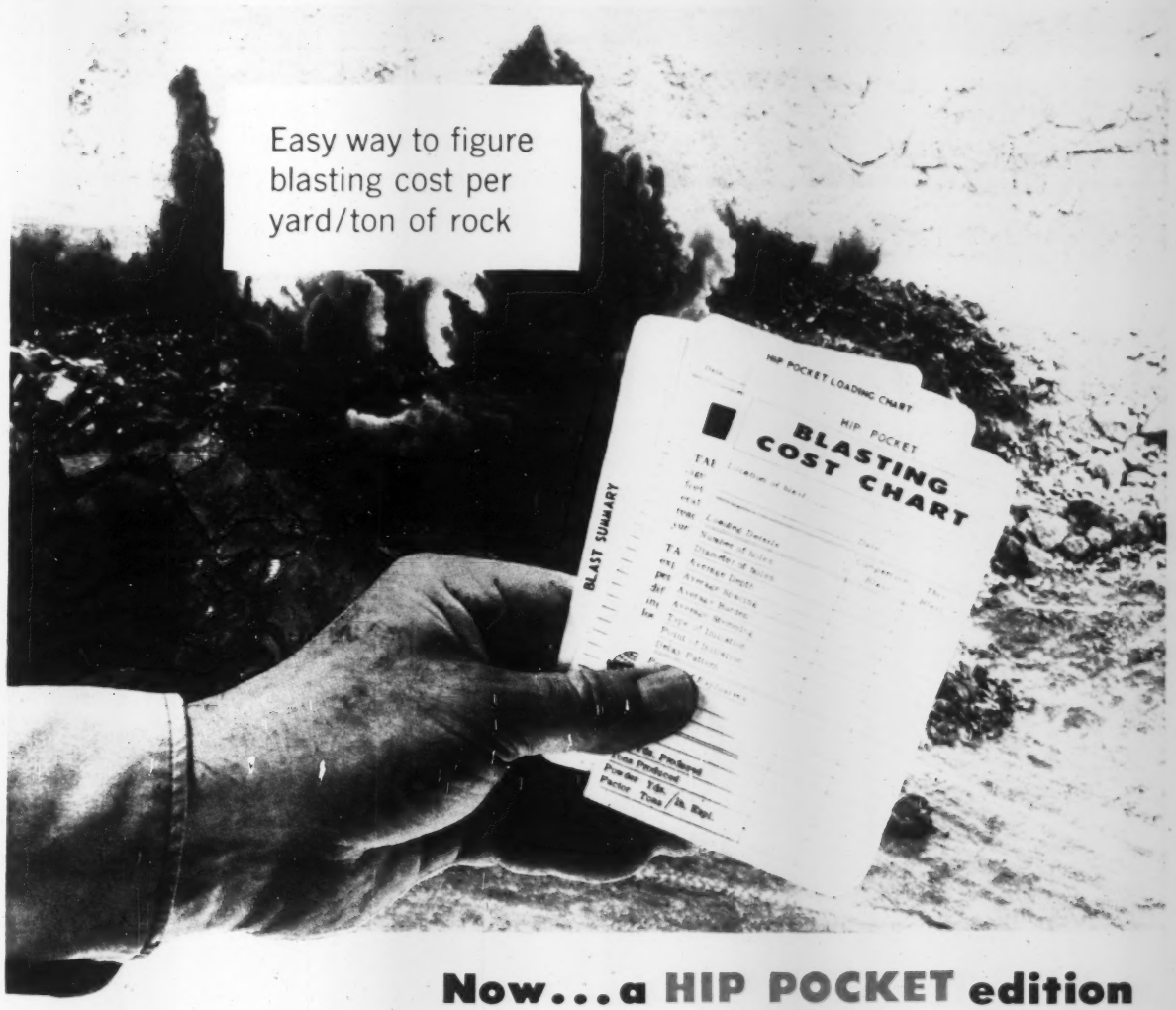
James E. McCaffrey, general manager and chief engineer of Sacramento Municipal Utility District, has resigned because of ill health. **Paul E. Shaad**, assistant general manager, will succeed him.

Public Works

Lt. Col. William W. Wacker, with the Air Force Academy Construction Agency, Colorado Springs, Colo., for the past 4½ years, has been named chief of its engineering division. He succeeds **Col. Joe R. White**, who is assigned to the civil engineering staff of Air Training Command Headquarters at Randolph Air Force Base, San Antonio.

Elmer B. Stevens has been appointed resident engineer for the Panama Canal Company on its new bridge over the canal at Balboa. A structural engineer with the company since 1936, Mr. Stevens changes from the position of chief of the structural branch of the company's engineering division.

(*Men and Jobs continued p. 118*)


Easy way to figure blasting cost per yard/ton of rock
HIP POCKET LOADING CHART
HIP POCKET
BLASTING COST CHART
BLAST SUMMARY

Now...a HIP POCKET edition of the Atlas BLASTING COST CHART

Here's a new 1959 Atlas Blasting Cost Chart that goes right out on the job with you—helps you record the cost data you need to protect your profits.

The original Blasting Cost Chart, with instruction book and Slide Rule, is being used successfully by hundreds of operators. Now, to make it more convenient, Atlas has added this "hip-pocket" edition. With it you can compare results from blast to blast to determine methods that pay off best. It helps you assemble quick cost facts on drilling, secondary breakage, digging, hauling, and crushing.

Your Atlas representative will be glad to show you how to use the new "hip-pocket" Cost Chart. He has a kit full of information that may help reduce your costs and protect your profits. Ask him for details, or write us direct.

EXPLOSIVES DIVISION

ATLAS POWDER COMPANY

WILMINGTON 99, DELAWARE

Offices in principal cities

Ask your Atlas representative to show you the electric match demonstration . . . See why Atlas E. B. Caps lead the field in dependable performance.

Gurley ***Current Meters for measuring stream velocity in:***

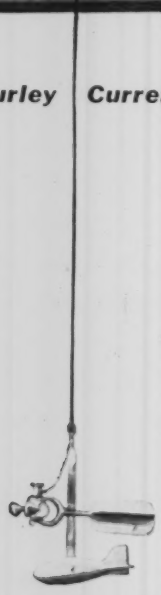
Fresh water—rivers, streams, canals, lakes

Salt or brackish water—with a newly-designed salt water model

Shallow or sluggish streams—with the Pygmy Current Meter

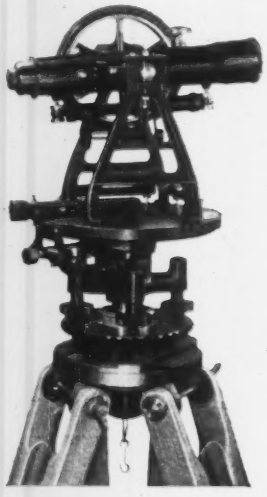
Industrial waste and sewage—where solids permit ...the Gurley Current Meter is made of non-corroding materials.

Gurley Current Meters have been the standard of the profession since 1870. Highly-standardized, easily-disassembled for cleaning, simple, precise and rugged. Write for "Gurley Current Meters" (Bulletin No. 700).



Have you tried the Gurley optical plummet transits?

Two Gurley transits now feature built-in Optical Plummets to eliminate plumb bobs. The Optical Plummets will focus on distant objects—or as close as 12 inches. Built-in shifting head allows 2-inch shift over a point, giving ample leeway in initial set-up. Write for Bulletin OP-100.



W. & L. E. GURLEY
Union Plaza, Troy, N. Y.

. . . Men & Jobs

Dayton L. Cook, assistant city engineer in Hamilton, Ohio, has resigned to become City Engineer in Zanesville, Ohio.

Col. Robert B. Young, deputy district engineer for the U. S. Army Corps of Engineers in Seattle, will become district engineer this summer when **Col. R. J. B. Page** leaves the post for the War College.

Leonard B. Dworsky, in charge of water supply and water pollution control activities for the U. S. Public Health Service in the Pacific Northwest, has been designated by the Department of Health, Education and Welfare as departmental representative on the Columbia Basin Inter-Agency Committee.

Col. James E. Walsh has been assigned as district engineer of the Vicksburg District effective July 1. He succeeds **Col. Milton P. Barschdorf,** who will be re-assigned to the Far East.

Eugene Avery has been promoted from city traffic engineer of St. Paul, Minn., to assistant city engineer. **Robert G. Peterson** has been designated acting traffic engineer.

H. Boyce Midgett, locating engineer at Morganton, N. C., for the North Carolina Highway Department, has been transferred to the department headquarters at Raleigh as engineering administrative assistant.

Arthur R. Daniel, former division traffic engineer with the Ohio Department of Highways, has been named area traffic engineer at Raleigh, N. C., for the state Highway Department.

Donald MacKenzie has been appointed general superintendent of operations for the St. Lawrence Seaway Authority in Ottawa.

Lowber B. Strange has been appointed sanitary engineer of Franklin County, Ohio. He succeeds Desso T. Mitchell, who has resigned to take a private job.

Samuel A. Engdahl has been appointed chief bridge engineer of the Rhode Island Department of Public Works. He has had almost 30 years of continuous service with the department.

Walter Johnson, Kansas state highway engineer, has been elected president of the Mississippi Valley Conference of State Highway Departments. He succeeds **D. H. Bray,** Kentucky state highway engineer.

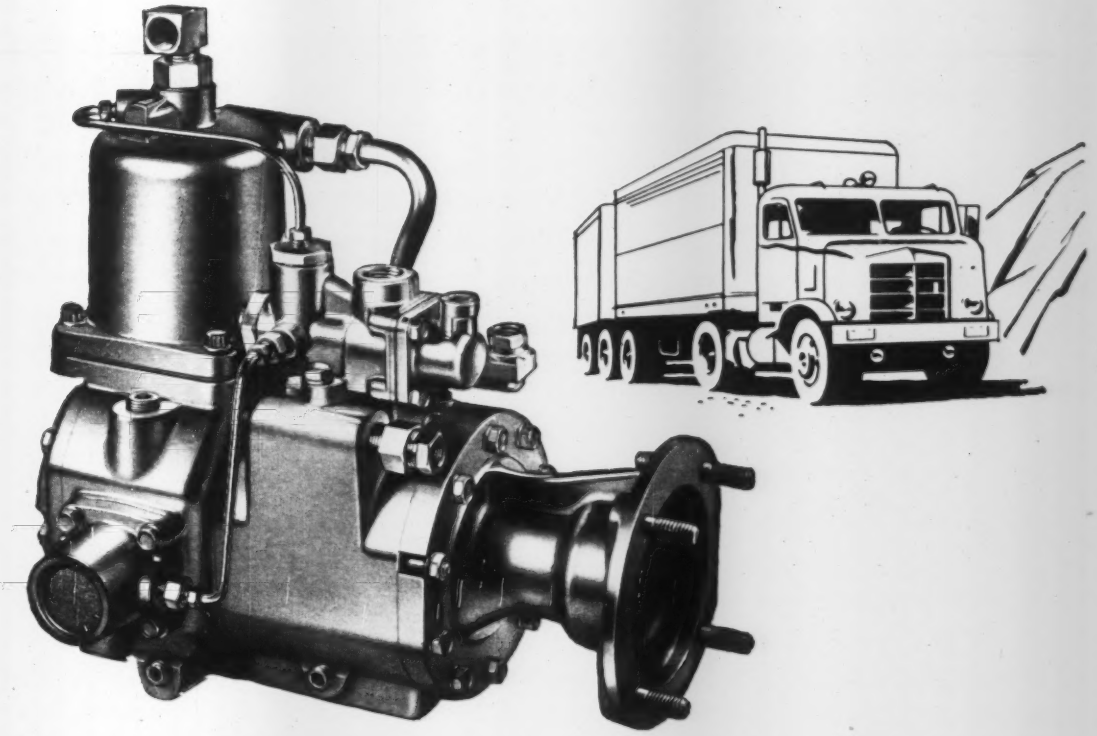
Associations

L. J. Busby has been re-elected president of the Corrugated Metal Pipe Association.

A. G. Cochran has been re-elected president of the Clay Sewer Pipe Association.

(*Men and Jobs continued p. 122*)

More air reserve for safer braking of diesel powered trucks...



with WAGNER ROTARY DRIVE-THRU COMPRESSORS

The Wagner Drive-Thru Compressor features all the advantages of rotary compression . . . supplies more air reserve for braking diesel trucks . . . gives rapid air pressure recovery with smooth, quiet, cool operation.

The design of the compressor eliminates the use of thrust absorbing components and makes it possible to use rotary seals with a minimum of seal loading. Improved channeling permits better oil circulation to all moving parts—lengthens the service life of the pump and cuts maintenance.

NEW LUBRICATING VALVE. The lube valve on these units circulates cool engine oil through the compressor during the non-pumping cycle and cools the compressor between cycles by completely changing the oil in the sump. Compressor life is prolonged by constant, adequate lubrication.

For full information on these compressors, write to Air Brake Engineering Department, Wagner Electric Corporation, St. Louis 14, Missouri.

Remember, when ordering new equipment, be sure to specify Wagner Air Brakes. Catalog KU-201 gives details.

WK59-B

Wagner Electric Corporation

6380 PLYMOUTH AVENUE, ST. LOUIS 14, MISSOURI

LOCKHEED BRAKE PARTS, FLUID, BRAKE LINING and LINED BRAKE SHOES • AIR HORNS • AIR BRAKES • TACHOGRAPHS • ELECTRIC MOTORS • TRANSFORMERS • INDUSTRIAL BRAKES

"Our Ford F-800's, pulling 20-ton payloads, give us mighty good service!"

says R. Dillard Teer, Vice President
Nello L. Teer Co., Durham, N. Carolina

"We operate about 115 Ford Trucks ranging in size from ½-ton pickups to Tilt Cab Tandem tractors. We believe in carefully fitting the truck to the job to be done and usually stay within the manufacturer's recommended ratings. We make an exception to this rule with our Ford F-800's, pulling 20-ton loads in aluminum trailer dumps to our quarry and crushing setup at Durham, North Carolina. These units are carrying the maximum legal limit and give us mighty good service!

"We haven't traded any trucks in about 6 years. It just happens that our company has been growing so rapidly that when we buy a new truck, usually an F-800, I put it under one of our trailer dumps. Then I'll take the old truck, lengthen the chassis, and make a grease outfit or a water wagon out of it. I would say out of over a hundred Ford units in the past 7 or 8 years, we have gotten rid of only a dozen altogether—and some of these were wrecked or burned.

"Another reason we use Fords is that this business is rough on trucks, so parts availability is very important. Our experience over the years with Ford as compared to Ford competitors has been definitely in favor of Ford on parts."

NOW! CERTIFIED PROOF!

FORD TRUCKS COST LESS

'59 Ford Pickups beat average mileage of other leading makes by 25.2% in Economy Showdown U.S.A.

Here at last is certified proof of the differences in gas mileage between six-cylinder pickups . . . evidence that you can use in your operation.

It was compiled by America's foremost independent automotive research firm after testing 1959 six-cylinder, ½-ton pickups of the six leading makes. All trucks were bought from dealers—just as you would.

The tests paralleled every kind of driving—high speeds and low, open highways and city traffic, even door-to-door delivery. And in every test, '59 Ford Sixes delivered more miles per gallon than any other make. Here are the actual percentages:

'59 FORD PICKUP SIXES GAVE

42.6% better mileage than make "D"
31.1% better mileage than make "I"
25.2% better mileage than make "C"
22.0% better mileage than make "S"
9.6% better mileage than make "G"

Taken together, Ford got 25.2% more miles per gallon than the average of all other leading pickups!

What's the secret of Ford's economy? First, of all pickup sixes, only the Ford Six has modern Short Stroke design which reduces friction and requires less fuel. Second, to this modern engine, Ford has added a new economy carburetor to meter fuel more precisely in both high- and low-speed ranges.

See your Ford Dealer for the full report of Economy Showdown U.S.A. and get the whole story firsthand.

All tests conducted and results
CERTIFIED
by America's foremost independent automotive research organization*
***NAME AVAILABLE ON REQUEST**
Send inquiry to P.O. Box 2687, Ford Division
Ford Motor Co., Detroit 31, Michigan

Now! During Dividend Days at your Ford Dealer's... Go *FORD*-ward for Savings

PROVIDE WATERTIGHT JOINTS IN CONCRETE CONSTRUCTION WITH...

Note Exclusive Rib Design

SEALTIGHT®

POLYVINYLCHLORIDE PVC WATERSTOPS

SPECIFICATIONS

Specific Gravity ..... 1.28 Max.
Durometer Hardness ..... 80 ± 3
Tensile Strength....2600 PSI Min.
Elongation ..... 350% Min.
Temperature Range ..... from +176°F - —50°F
Cold Brittleness Test ..... —50°F ASTM D746 —55T

Chemically resistant to chlorinated water, salt water, acids, alkalis, sewage wastes, oil, etc.

SEALTIGHT PVC Waterstops are extruded from a special PVC compound with added plasticizer and stabilizer to provide all of the necessary qualifications of a true waterstop. The exclusive cross-section design features a unique rib that has a vertical surface on the leading edge and a diagonal surface on the trailing edge to provide a tenacious grip to the concrete in which the waterstop is embedded . . . the special center bulb provides the ability for the waterstop to successfully handle tremendous pressures caused by concrete movements. SEALTIGHT PVC Waterstops are strong and flexible . . . on-the-job splicing may be accomplished quick and easy without special equipment. Ideal for installation in concrete structures of all types. SEALTIGHT PVC Waterstops offer the construction industry the top-quality product in its field at a competitive price . . . specify SEALTIGHT PVC Waterstops when you want a 100% watertight joint.

OTHER SEALTIGHT PRODUCTS

- "PREMOULDED MEMBRANE" . . . the industry's only TRUE VAPOR SEAL.
- "CORKTITE" impermeable Perimeter Insulation.
- "HYDROMAT" Asphalt Liners.
- Expansion Joints of all types.
- Joint Sealing Compounds.
- Tongue and Groove Centerstrip.
- Air Entraining Agents.
- Concrete Curing Compounds.

W. R. MEADOWS, INC.
16 KIMBALL ST. • ELGIN, ILLINOIS

. . . Men and Jobs

Theodore T. Pantaleo, county director of Public Works for Anne Arundel county, Md., has been elected president of the county's Society of Engineers and Surveyors.

Ernest E. Michaels, president of Chicago Bridge & Iron Co., Chicago, is serving a three-year term as chairman of the Welding Research Council of the Engineering Foundation.

Leonard F. Merrick, Cleveland builder is now president of the Ohio Home Builders Assn. **Ben F. Stormes** of Cleveland is the new treasurer.

John A. Blume, of Hillsborough, Calif., has been named president of the Consulting Engineers Association of Calif. Mr. Blume, whose office is in San Francisco, is a structural engineer.

Harold A. Cloud has been appointed assistant managing director of the American Concrete Pressure Pipe Association. He has been a research engineer for the Minneapolis Honeywell Regulator Co. Before that he was a member of the University of Minnesota agricultural engineering staff.

J. T. Banner, consulting engineer of Laramie, Wyo., has been elected president of the Wyoming Engineering Society.

James F. Hope, of Suffolk, Va., was chosen as president of the Virginia chapter of Associated General Contractors. He succeeds **James M. Coleman,** vice president of Wise Contracting Co., Richmond.

Harold O. Kester, co-owner of Eagle Construction Co., Cheyenne, Wyo., and Loveland, Colo., has been elected president of the Wyoming chapter of Associated General Contractors. His predecessor in the post was **George A. Nugent,** of Peter Kiewit & Sons, Sheridan, Wyo.

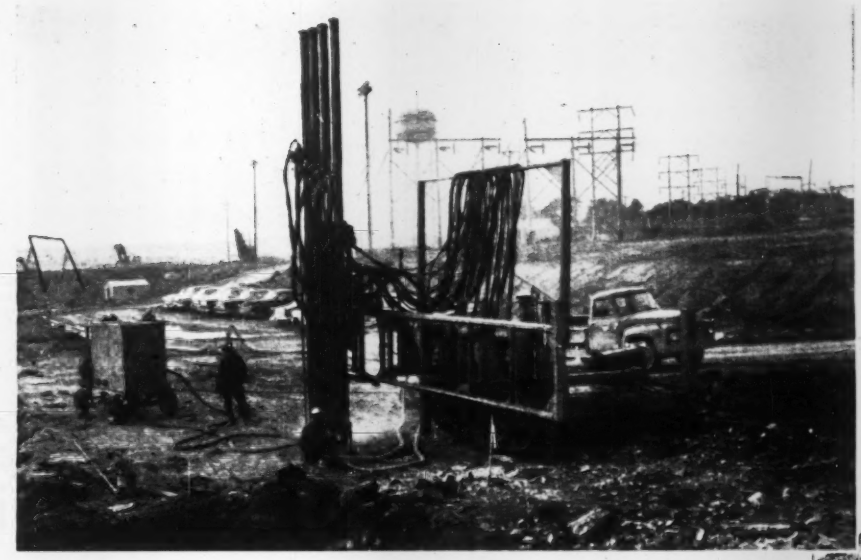
Retirements

Claude Nowlan, Grays Harbor County, Wash., engineer for the last six years and an employee of the county engineer's office for about 20 years, retired. **Elwood Shorey,** assistant engineer, has been named acting county engineer.

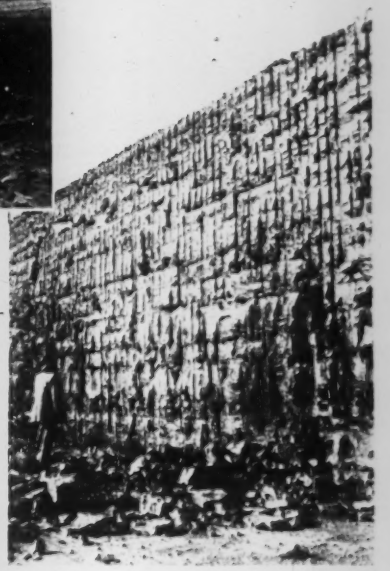
Maurice Nicholls, New York manager of project development for the engineering and construction divisions of Henry J. Kaiser Co., has retired after about 20 years with the firm. **J. H. Rowan,** director of purchases for Kaiser Engineers, has retired. He will assume a consulting position as director of special purchases for the firm.

Calvin M. Cooper has retired as city engineer in Pittsburg, Kansas.

W. Pressley Davis has retired from federal service after 28 years with the U. S. Army Corps of Engineers and the U. S. Coast & Geodetic Survey.



The specially-designed Ingersoll-Rand line hole rig at the left gives the results shown below—a straight, vertical rock face with smooth walls and minimum overbreak.



LINE-HOLE DRILLING RIGS

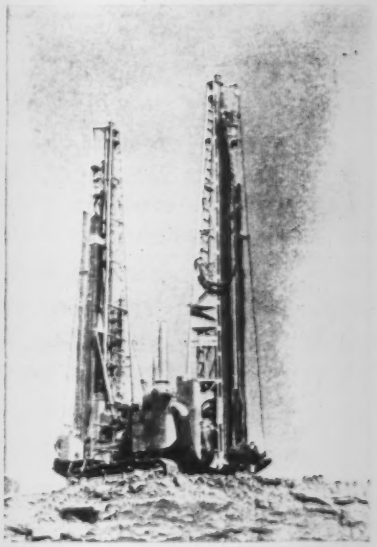
by Ingersoll-Rand help Niagara Power Project KEEP A STRAIGHT FACE

Keeping this rock face straight and smooth is more than a matter of good looks—it *saves money!* The Niagara Power Project requires a 22,000 ft twin-tube intake conduit—a horseshoe shaped channel of cut-and-fill construction, 46 ft deep by 66 ft wide, blasted out of solid rock. As the walls are to be concrete lined, the rock face must be straight and smooth to reduce the amount of concrete required.

The contractor is speeding precision line-hole drilling on this job with the Ingersoll-Rand line-hole rig shown above. Mounted on an air-powered Drillmaster crawler unit, the rig carries four D-45 drills on 26½ foot towers, spaced 18 inches apart and movable horizontally on a 25 ft carriage frame. The entire frame can be extended or retracted as much as 4 ft and can be angled to the line of crawler travel, permitting each group of holes to be spotted exactly on the surveyed line. At each setup of the crawler unit, the rig drills 32 holes on 9-inch centers, or 25 lineal feet in 8 groups of 4 holes each. This greatly reduces setup time and speeds drilling all along the line.

Seven other I-R line-hole rigs of similar construction are also in use on the Niagara project, as well as a special double-ended Drillmaster that can sink two 6½" blast holes at a time with the sensational I-R DOWNHOLE drill.

Whatever you need for drilling rock, Ingersoll-Rand either *has* it, or *can build* it.

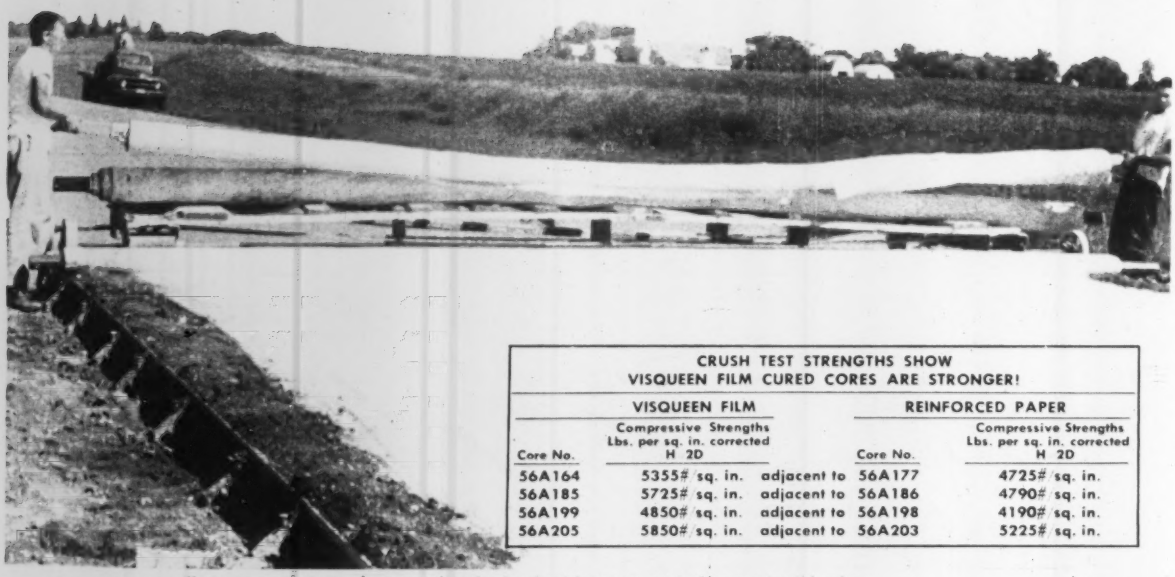


Special double-ended Ingersoll-Rand Drill-master, used on another part of the same job, drills 6½" line holes in conjunction with a two drill unit like the one above.

Ingersoll-Rand

5-900 11 Broadway, New York 4, N. Y.

A CONSTANT STANDARD OF QUALITY IN EVERYTHING YOU NEED FOR DRILLING ROCK



CRUSH TEST STRENGTHS SHOW VISQUEEN FILM CURED CORES ARE STRONGER!				
VISQUEEN FILM			REINFORCED PAPER	
Core No.	Compressive Strengths Lbs. per sq. in. corrected H 2D		Core No.	Compressive Strengths Lbs. per sq. in. corrected H 2D
56A164	5355# sq. in.	adjacent to	56A177	4725# sq. in.
56A185	5725# sq. in.	adjacent to	56A186	4790# sq. in.
56A199	4850# sq. in.	adjacent to	56A198	4190# sq. in.
56A205	5850# sq. in.	adjacent to	56A203	5225# sq. in.

Core strength tests show results obtained with VISQUEEN film curing blankets.

"VISQUEEN" FILM GIVES STRONGER CURES WITH GREATER ECONOMY

TRADEMARK

LOW FIRST COST—plus as many as 23 re-uses cut blanket costs to a fraction of a cent sq. ft.

LOWER LABOR COSTS result because white opaque VISQUEEN film is far lighter, hence easier, more speedily handled. 1000 sq. ft. of .004" thickness weighs 20 lbs. And white opaque VISQUEEN film curing blankets *stay* light. Will not absorb moisture.

TIME SAVING: When using VISQUEEN film curing blankets, additional watering is not necessary. The film rolls up easily—needs no drying or special handling. Will not rot or mildew. Inert—no chemical reactions with concrete—leaves no deposit on slab.

ONLY VISQUEEN film comes in standard widths—or blankets—*seamless* widths up to 32'. Available in 14' roll widths with no folds.

ADDITIONAL USES of VISQUEEN film: rain blankets, equipment and material covers.

Write now—or use the information request tag below for full information on how VISQUEEN film can do your job better at less cost.

information request tag

VisQueen

Trade Mark

clip this tag — END

attach to letterhead, mail

VISQUEEN *film—first and foremost polyethylene film.*
A product of the long experience and outstanding research of
PLASTICS DIVISION
VISKING COMPANY *Division of* UNION CARBIDE *Corporation.*
6733 West 65th Street, Chicago 38, Ill.
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VISQUEEN, VISKING and UNION CARBIDE are registered trademarks of Union Carbide Corporation.

Obituaries

Ted W. Legge, 56, a member of the Indiana Flood Control and Water Resources Commission. He was also vice president of the Bloomington Limestone Corp. and Midwest Quarries Inc.

Harry S. Funk, 70, retired head of the Civil Property Unit of the Louisville District, Corps of Engineers. Before retiring in 1950, Mr. Funk worked for the Corps 32 years.

Eliot C. Wells, 67, power-utilities specialist in the Navy's Bureau of Yards and Docks. A government employee for 19 years, he was in charge of the power supply for the Western States for the War Production Board during World War II. He had previously supervised electric power cooperatives in the same area for the Rural Electrification Administration.

J. P. Brownstead, 68, retired utilities director for Ashland, Ky. Before retiring last March Mr. Brownstead had been associated with Ashland's municipal water works for 40 years. He received the American Water Works Association's George W. Fuller Memorial Award in 1951 for distinguished service in the water supply field.

James B. Mann, 66, head of his own engineering firm in Honolulu. At various times during his 40 years of engineering in the Hawaiian Islands Mr. Mann was associated with the Territorial Public Works and Surveyor's offices, the U. S. Geological Survey and the County Engineers Office. He entered private practice in 1925, with Wright, Harvey & Wright.

Bourke C. Samples, 56, director of the Engineering Division, Savannah River Operations Office of the Atomic Energy Commission, Aiken, S. C. Mr. Samples had been with AEC since 1950 and at Savannah River Office since 1951. Prior to that time he was with the Corps of Engineers on dam, flood control, and military construction work in the Louisville, Eastport, New York, Providence, Binghamton, Syracuse, and Baltimore districts. From 1929 to 1936 he served as county engineer of Warwick County, Indiana.

William D. Alexander, 83, retired drainage engineer of Charlotte, N. C. He established his own firm in 1903 after obtaining a civilian engineering degree from North Carolina State College. For 50 years Mr. Alexander was chairman of the Mecklenburg County Drainage Commission at Charlotte.

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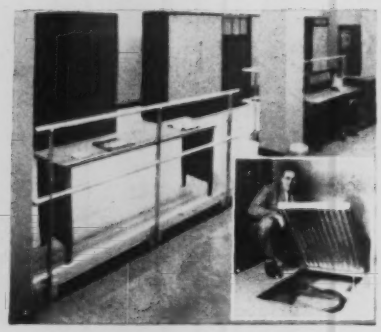

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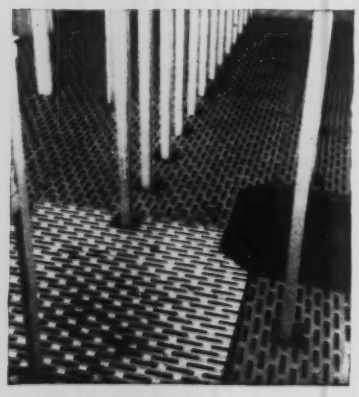

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Books

Accounting and Management for Builders

CONSTRUCTION ACCOUNTING AND FINANCIAL MANAGEMENT—By William E. Coombs. 481 pages. F. W. Dodge Corp., New York, N. Y. $12.85.

Here is an excellent reference work on business methods for contractors. The book offers invaluable advice on accounting and management procedures and is profusely illustrated with sample forms and reports.

The construction industry, the author points out, has peculiarities that make inapplicable many accounting procedures used in other industries. Standard methods frequently have to be modified for use by a contractor. As a result, the construction industry has developed business methods of its own. This book discusses these, illustrates the records that should be kept by contractors, large, small and medium, explains why and indicates the useful information that can be obtained from these reports.

The book compares centralized and decentralized accounting. It delves into purchasing policies and procedures. It analyzes subcontracting. It studies change orders. It covers accounting for labor, materials, equipment costs, overhead, and income and cash receipts. It discusses vouchering and disbursement control. And it considers applications of accounting machines.

Information for the book has been derived from many sources. "For years I have been shamelessly picking the brains of everyone I met who would talk about construction accounting," writes the author. He is an attorney and accountant, currently secretary-treasurer of Matich Corp., general contractor, Colton, Calif.

Concrete: Its Properties and Its Uses

CONCRETE TECHNOLOGY—Vol. 1, by D. F. Orchard. 345 pages. Contractor's Record Ltd., Norfolk St., Strand, London, W.C. 2. 45s.

This book will be a valuable addition to an engineer's library. It deals with properties of materials that go into concrete. The discussion is authoritative and the material is briefly and clearly presented.

The text summarizes the properties of the various types of cement in general use, effects of additives and characteristics of aggregates. It reports on properties, applications and methods of making both ordinary and lightweight concrete. And it takes up the problem of making concrete resistant to deterioration and chemical attack.

It is noteworthy that in the chapter dealing with characteristics of cements and concrete is a section on electrical properties. The author calls attention to an interesting application of these. Concrete is used as third-rail insulators for French electric railways. It is made with high-alumina cement, with a bituminous emulsion in the mixing water. Thermally treated, the concrete is given a final coat of varnish. Similar concrete, the author writes, has been used in the manufacture of insulators for power transmission lines.

The book contains a multitude of suggestions for improving quality of concrete.

The Architect as a Businessman

HANDBOOK OF ARCHITECTURAL PRACTICE—Edited by Clinton H. Cowgill. 450 pages. American Institute of Architects, 1735 New York Ave., N.W., Washington 6, D. C. $8.

Though this reference book is intended primarily as a guide for architects, many parts of it will be useful to others concerned with building design and construction. It deals with architectural business practices, with emphasis on the relationships between architects and their clients, engineers, other architects and contractors. It also touches on legal matters.

A valuable contribution of the book is the substantial appendix devoted to typical forms. Included are standard forms of agreement between owner and architect, interprofessional agreements, arbitration procedure and accounting forms.

In addition there are several important construction documents—owner-contractor agreements, bid bond, performance bond and payment bond, standard form of subcontract, payment applications and certificates, progress schedule and daily report form.

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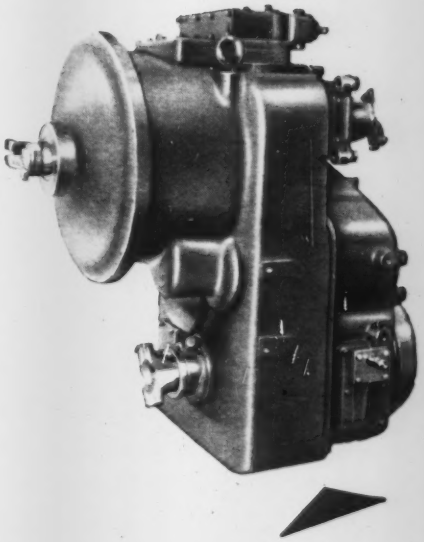

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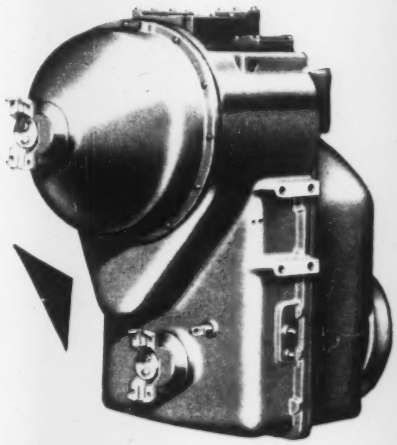

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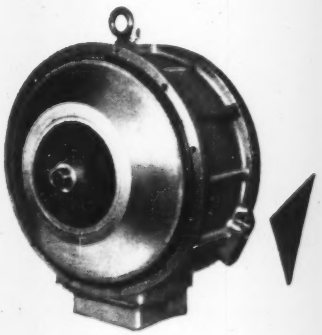

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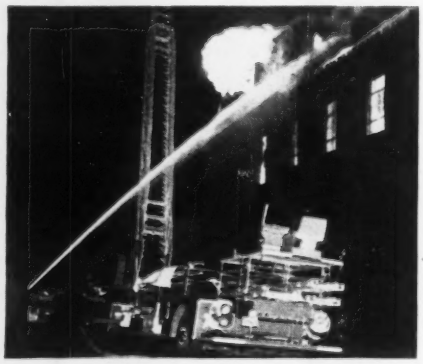

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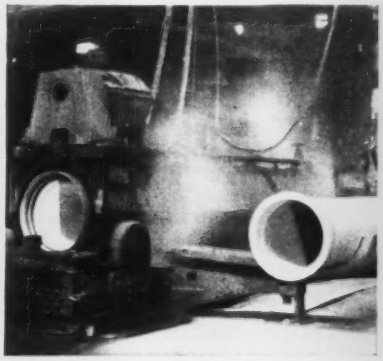

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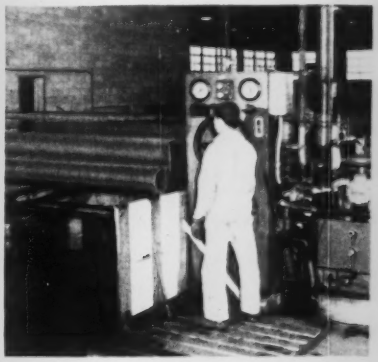

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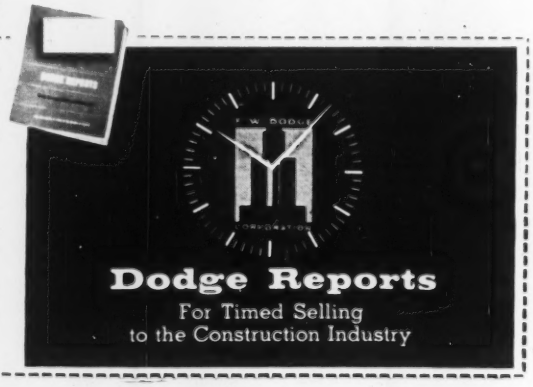

the text is divided into three parts, or books. The characteristics and composition of the building industry is surveyed in Book I. Organization and office procedures of architectural firms are pictured in Book II. And Book III analyzes in detail the normal procedures of an architect in handling a building project.

Brief Reviews . . .

• **Water balance**—A compilation of information for use in calculating water available in eastern North America by C. W. Thornthwaite and associates J. R. Mather and D. B. Carter. Key items in the assembled data are shown on three 21 x 29-in., five-color maps. The maps show potential evapo-transpiration, water surplus, and water deficit—knowledge needed in calculating net water availability. A 56-page booklet interpreting the water balance data is included. Maps and booklet are available from Resources for the Future, Inc., 1145 19th St., N. W., Washington 6, D. C. $2.00.

• **Water resources map**—A new map showing expansion of flood control, irrigation, navigation and power developments by the Corps of Engineers, Bureau of Reclamation and Tennessee Valley Authority over the past five years. The map, which brings up to date the Federal Government's official water resources map, can be purchased from the Superintendent of Documents, Government Printing Office, Washington 25, D. C. Price $2.25.

• **Radiation shielding**—Concrete for Radiation Shielding is a compilation of seven papers on the use, calculation of proportions and properties of heavy concrete. The papers cover cost, characteristics of radiation absorption, ore aggregates, such as iron, steel, Barite and Magnitite plus tables and graphs of performance. Copies are $4.00 each. American Concrete Institute, P.O. Box 4754, Redford Station, Detroit 19, Mich.

• **Taxes for roads**—Special Report 35 of the Highway Research Board, titled "A Highway Taxation Cost-Benefit Analysis" is a study of who shall pay how much for which highway. Written by Bertram H. Lindman, consulting engineer and economist, Washington, D. C., the report examines the bases for cost allocation and then develops a three-step method for making the cost-benefit analysis. Available from the National Academy of Sciences, Washington, 25, D. C.

(*Books continued p. 132*)

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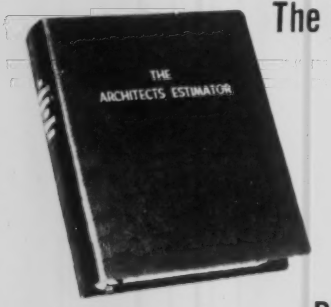

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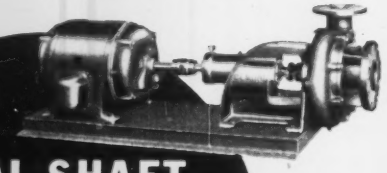

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• **Oxygen Relationships in Streams**—Papers given at a seminar on oxygen relationships in streams have been published by the U. S. Public Health Service. Topics include dissolved oxygen requirements for fish, the oxygen sag requirements equations, measurement and calculation of the stream re-aeration ratio, sampling and analytical methods in stream studies, effect of algae on dissolved oxygen, biochemical oxygen demand and the use of stream data in pollution-abatement programs. The 194-page volume is available on request to Director, Robert A. Taft Sanitary Engineering Center, Cincinnati, Ohio.

Just Published . . .

HIGH PRESSURE TEST FOR DETERMINING AIR CONTENT OF HARDENED CONCRETE—U. S. Army Engineer Waterways Experiment Station, Vicksburg, Miss. 50 cents.

SOUND INSULATION OF WALL, FLOOR, AND DOOR CONSTRUCTIONS—Superintendent of Documents, Government Printing Office, Washington 25, D. C. 10 cents.

AN EXPERIMENTAL INVESTIGATION OF OPEN WEB BEAMS—Bulletin No. 47, Welding Research Council, 29 West 39th St., New York 18, N. Y. $1.00.

THE CHALLENGE OF URBAN RENEWAL—Technical Bulletin 34, Urban Land Institute, 1200 18th St., N. W., Washington 6, D. C. $3.00.

HOW TO DESIGN POLE TYPE BUILDINGS—American Wood Preservers Institute, 111 West Washington St., Chicago 2, Ill. $1.50.

NATIONAL SCIENCE FOUNDATION 8TH ANNUAL REPORT, 1958—Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C. $1.00.

INSTALLATION AND MAINTENANCE OF RESILIENT SMOOTH SURFACE FLOORING—Publication No. 597, Building Research Institute, 2101 Constitution Ave., N. W., Washington 25, D. C. $5.00.

SELECTED TOPICS OF FLUID MECHANICS—Paper 1360-A, Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.

PLASTIC DESIGN OF PINNED BASE GABLE FRAMES—by Robert L. Ketter, No. 48, Welding Research Council, 29 West 39th St., New York 18, N. Y. $1.00.

TRANSPORTATION LINES ON THE ATLANTIC, GULF, AND PACIFIC COASTS 1958—Superintendent of Documents, Government Printing Office, Washington 25, D. C. $2.50.

RESEARCH HIGHLIGHTS OF THE NATIONAL BUREAU OF STANDARDS, Annual Report, 1958—Publication 226, 138 pp. Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C. 45 cents.

SELECTED BIBLIOGRAPHY ON BUILDING CONSTRUCTION AND MAINTENANCE—Report 140, Government Printing Office, Superintendent of Documents, Washington 25, D. C. 30 cents.

(*Books continued p. 134*)

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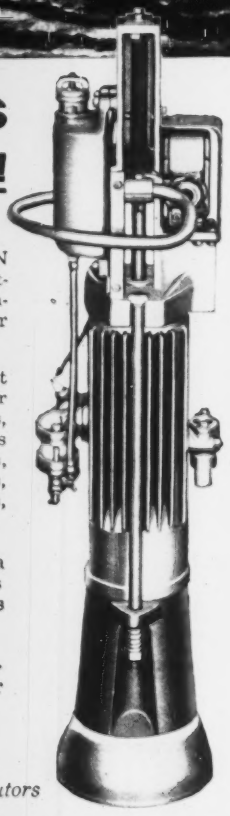

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MANUAL OF RECOMMENDED PRACTICE ON CONCRETE FINISHES—The Concrete Industry Board, Inc., Room 2503, 220 East 42nd St., New York 17, N. Y. $1.00.

COMPILATION OF ASTM STANDARDS ON CEMENT C-1—278 pp. American Society for Testing Materials, 1916 Race St., Philadelphia 3, Pa. $3.50.

CATALOG OF HIGHWAY CONSTRUCTION TEACHING AIDS—Bulletin No. 237. American Road Builders' Association, World Center Building, Washington 6, D. C. $1.00.

CONFERENCE ON ELECTRONIC COMPUTATION. 436 pp—The Kansas City Section, American Society of Civil Engineers, Kansas City, Missouri. $10.00.

SELECTED BIBLIOGRAPHY ON BUILDING CONSTRUCTION AND MAINTENANCE—U. S. Government Printing Office, Division of Public Documents, Washington 25, D. C. 30 cents.

KING-POST NAILED TRUSSED RAFTERS—No. 36. Virginia Polytechnic Institute, Wood Research Laboratory, Blacksburg, Va.

STRUCTURAL BEHAVIOR OF A PLATE RESEMBLING A CONSTANT THICKNESS BRIDGE ABUTMENT WINGWALL—Bulletin No. 182. Iowa Engineering Experiment Station, Iowa State College, Ames, Iowa. 75 cents.

SYMPOSIUM ON RADIOACTIVITY IN INDUSTRIAL WATER AND INDUSTRIAL WASTE WATER—76 pp. American Society for Testing Materials, 1916 Race St., Philadelphia 3. $2.50.

THE CONCEPTS AND PRINCIPLES OF FUNCTIONAL DRAFTING—A 20 minute, 16 mm sound motion picture. Industrial Education Institute, 25 Huntington Ave., Boston 16, Mass. Gerard A. Glass, Executive Director.

RECOMMENDED BUILDING CODE TEXT FOR CHIMNEYS AND FLUES—Clay Flue Lining Institute, 161 Ash Street, Akron 8, Ohio. Free.

CRAWL SPACE HOUSES—6 pages. Small Homes Council, University of Illinois, Urbana, Ill.

A SCHOOL FOR JOHNNY—A 14-minute 16mm sound motion picture showing how architects design schools. Produced by the A. I. A. Available from Frederic P. Wiedersum Associates, 10 Columbus Circle, New York, N. Y.

RESIDENTIAL WIRING HANDBOOK—Industry Committee On Interior Wiring Design, Room 1600, 750 Third Ave., New York 17, N. Y. Single copies 25 cents.

LIGHTING FOR HOTELS—40 pages. A report of the Hotel Lighting Subcommittee of the Illuminating Engineering Society in collaboration with the American Hotel Association. Available from the Publications Office, Illuminating Engineering Society, 1860 Broadway, New York 23, N. Y. Single copies, 70 cents.

I.E.S. LIGHTING HANDBOOK, THIRD EDITION—1,100 pages. Publications Office, Illuminating Engineering Society, 1860 Broadway, New York 23, N. Y. $10.00 per copy.

HANDBOOK FOR WELDING LOW ALLOY HIGH STRENGTH STEELS—by research staff of Alloy Rods Co., York, Pa.

(*Books continued p. 143*)

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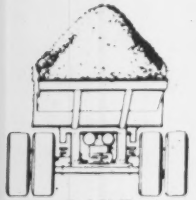
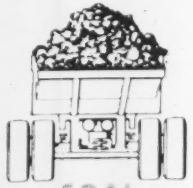
1. Overflexing—breaks down tire cord body.
2. Greater impact when tire strikes an obstruction—more likelihood of cord damage.
3. Strained tire beads—resulting in complete tire failure.
4. Increased chance of cutting—rate of tread wear skyrockets.
5. Severe pounding action—causes tread and ply separation.



DIRT

With packed earth, weighing 2570 lbs. per cu. yd., these tires may not be overloaded. But with a similar load of marl clay weighing 3700 lbs. per cu. yd. tires would be overloaded.



COAL

Tires may be fully loaded with bituminous coal weighing only 1435 lbs. per cu. yd., but if other types weighing up to 2270 lbs. per cu. yd. are hauled, fewer cubic yards should be carried.

ROCK

Watch volume of loads. For example, shale weighs 2800 lbs. per cu. yd. and sandstone up to 4500 lbs. per cu. yd. Looks and actual weight of loads can be deceiving.

Check tire inflation regularly

Air pressure should be checked once a day if possible, but never less than two or three times a week. Check tires when they are cool. Examine valve cores for leaks. Pressure "buildup" is normal. If pressure goes 15 lbs. over normal, reduce load or speed. Never "bleed" air pressure build-up under operating conditions, especially in hot weather.

Results of overinflation

1. Cords are stretched, lose as much as 35 to 40% of their tensile strength—too weak to resist impact breaks.
2. Rubber is under tension and susceptible to cuts.
3. Tread ground contact area is reduced, speeding rate of wear.
4. Less contact area lessens flotation, reduces traction, requires more power.
5. Equipment is pounded to pieces, driver fatigue is increased.

Results of underinflation

1. Tires flex severely, build up excessive heat which may cause ply or tread separation.
2. Edges scuff over the road. Tread center buckles causing rapid shoulder wear.

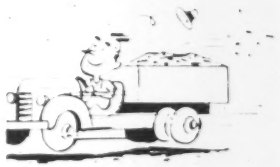
OVERINFLATION

UNDERINFLATION

PROPER INFLATION

9 Tire Care Tips

Respect for equipment and a keen interest in keeping it in good condition are characteristics that make one driver better than another. Here are some pointers a good driver never forgets—pointers that lead to increased tire performance and lower tire cost-per-mile or per-hour.

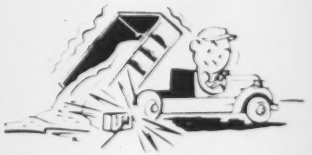


DON'T SPEED

Off-the-road tires are designed for speeds up to 30 mph, depending on the load carried. Excessive speed results in fast tread wear and heat build-up.

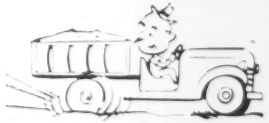
DON'T PIVOT

Pivoting on one wheel causes tire body distortion that loosens cords, damaging both tire and tube. It also tends to twist foreign objects into the tread.



DON'T JUMP LOADS

Banging tires against a barrier to speed up unloading can cause serious tire damage. Tilt the load more and gravity will handle the unloading.



DON'T SPIN WHEELS

Every turn of a wheel without traction scrapes off good rubber and wastes engine power.

DON'T DRIVE OVER OBSTACLES

Avoid sharp rocks and other objects that can damage tires and cause premature tire failure.

DON'T SLAM ON BRAKES

Quick stops scuff off tread rubber. Anticipate stops — brake gradually.

AVOID OIL

Rubber soaked in oil, gas or grease deteriorates quickly. Avoid areas where these substances are prevalent.

DON'T RUB TIRES

Side banks are just as detrimental to off-the-road tires as street curbs are to passenger car tires.

DON'T KEEP SECRETS

Report any unusual condition of tires, vehicle or road surfaces. Inspect your vehicle regularly.

PULL TO TEAR OUT

Make sure you have the right tires for the work you do!

The right tires give you lowest cost per mile!

B.F.Goodrich makes a complete line of off-the-road tires—both tubeless and tube-type—in a full range of sizes and tread designs. Each tire is engineered to give longer service under certain types of operating conditions. Make sure the tires you use were designed for the work you do, because the right tires give you lowest cost per mile!

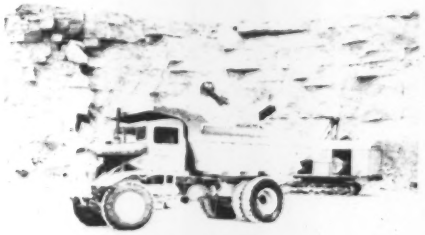
All B.F.Goodrich off-the-road tires are available with HEX-RITE NYLON cord construction. HEX-RITE NYLON withstands double the impact of ordinary materials, resists heat blow-outs and flex breaks. The B.F.Goodrich HEX-RITE NYLON cord body outwears even extra-thick treads, can be retreaded over and over.

Rock Service

Newest, off-the-road tire on the market today prevents unnecessary tire failures. For mine, quarry and dirt-moving work. Regular, wide base and high tread types available. Sizes 12.00-21 thru 33.5-33.

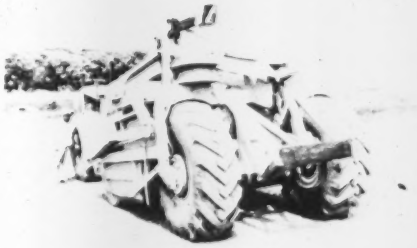
Rock Logger

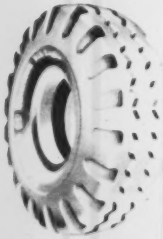
For logging, transit mix and dump trucks, and the like. Use it in the rough and on short highway hauls. Ribbed tread and wire overhead types too. Sizes 10-22.5 thru 14.00-24.



Super Traction

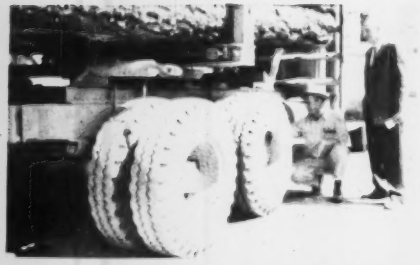
Built for traction and flotation on power wheels of dirt-moving rigs working in sand, mud and soft dirt. Use tire in reversed position on free-rolling wheels. Sizes 18.00-24 thru 27.00-33.

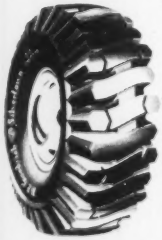




Ribbed Logger

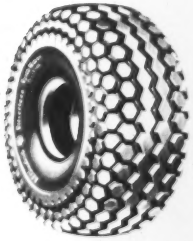
Running mate to the Rock Logger, this tire is designed for front or free-rolling wheels. May also be used on drive wheels where extreme traction is not needed. Sizes 9.00-20 thru 10.00-22.





All-Purpose

Designed for truck operators who use their equipment on both smooth pavement and dirt, gravel or mud roads. Up to 67% deeper tread digs in and pulls. Sizes 6.00-16 thru 12.00-24.



Earth Mover Traction

This free-rolling tire is designed for scrapers, earth-moving wagons and heavy-duty pulled equipment. Gives modified traction too. Sizes 11.00-20 thru 24.00-29.

Tractor Grader

For drive wheels on road graders, motor patrols and tractors used in construction work, grading, road maintenance. Wide base and ribbed tread available. Sizes 9.00-24 thru 18.00-26.

PULL TO TEAR OUT

There's a B.F.Goodrich tire for every off-the-road job!

Operating conditions

The most important factor in operating conditions is the haul road. Proper planning of the road and work areas to prevent excessive braking and turning will save valuable time and cut tire costs.

Road maintenance

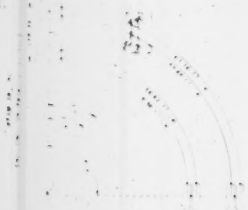
The road bed should be built and maintained free of severe depressions or chuck holes. Constant maintenance with a bulldozer or road grader will pay big dividends in reduced tire and equipment expense.

Tire clearance

Be sure tires do not rub against the body of the vehicle. Check regularly to avoid tire damage caused by loose or broken springs.

Water

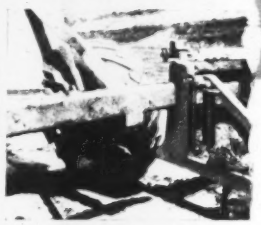
Wet rubber cuts three to four times as easily as dry rubber. Eliminate water by ditching or pumping in areas where rubber-tired equipment is used.



The outside dual tire on a sharp curve travels considerably farther than the inside tire. It scrapes this extra distance.

Rely on expert on-the-job tire service to cut operating costs!

B.F.Goodrich Servicemobiles are equipped with hydraulic cranes, pneumatic wrenches, bead jacks and all the latest tools for on-the-job tire service—no matter how big the tire, how intricate the equipment, how complicated the job! B.F.Goodrich Service Men give you fast, expert service. Result: you save on down-time, eliminate unnecessary delays, reduce operating costs.



Tree stumps, boulders and other obstacles should be cleared from the haul road and working areas.

Be sure tire clearance is satisfactory at all times. Check for loose or broken springs which might damage tires.

5 no-obligation B.F.Goodrich services

Your B.F.Goodrich Tire Service Man will:

1. Inspect all your tires.
2. Point out tires that should be repaired or replaced.
3. Select tires for retreading by factory-tested and proved B.F.Goodrich methods.
4. Set up a proper inflation program.
5. Start you on a program of regular tire rotation and inspection.

Call the B.F.Goodrich store or dealer nearest you for all your tire and service needs

The B.F.Goodrich stores and dealers listed below are prepared to cut your operating costs and increase tire life with expert, on-the-job tire service. For a more complete listing in your area, consult the Yellow Pages of your phone book.

ALABAMA

ANNISTON	ADams 5-2571
BIRMINGHAM	FAirfax 2-0361
GADSDEN	Liberty 6-5271
HUNTSVILLE	JEfferson 6-2487
MOBILE	HEmlock 2-2681
MONTGOMERY	AMherst 2-1661
TUSCALOOSA	PLaza 5-8312

ARIZONA

PHOENIX	ALpine 3-6168
TUCSON—Baum & Adamson	MAin 3-3581

ARKANSAS

BLYTHEVILLE	POplar 3-6816
CAMDEN	TEmple 5-9334
FORT SMITH	SUnset 3-4124
LITTLE ROCK	FRanklin 4-5066
MALVERN	409
PINE BLUFF	JEfferson 4-5123

CALIFORNIA

BAKERSFIELD	FAirview 3-4701
BELL GARDENS—Gardner Tire Sales	SPruce 3-2911
EUREKA	HIllside 2-5700
FRESNO	ADams 3-5216
LOS ANGELES	Richmond 8-6171
MODESTO	LAmbert 2-1005
OAKLAND	Highgate 4-2830
REDWOOD CITY	EMerson 8-4648
RICHMOND	BEa 4-7271
SACRAMENTO	Gilbert 2-3811
SAN BERNARDINO	TUrner 8-0947
SAN DIEGO	BEImont 2-3131
SAN FRANCISCO—Ferry & Whitelaw, Inc.	UNderhill 1-1601
SAN JOSE	CYpress 5-6050
SAN MATEO—Perry & Whitelaw, Inc.	DIamond 2-2051
STOCKTON	MOward 6-8631
VAN NUYS—Ben Ridnick Tire Co.	STanley 3-2066
VISALIA	REdwood 3-6714

COLORADO

DENVER	KEystone 4-0175
PUEBLO	Lincoln 4-1663

CONNECTICUT

HARTFORD	JAckson 7-2121

DISTRICT OF COLUMBIA

WASHINGTON	REpublic 7-5525

FLORIDA

[illegible]	FLinton 3-6505
FT. LAUDERDALE	JAckson 4-6662
JACKSONVILLE	ELgin 4-2801
LAKELAND	MUtual 2-0331
MIAMI	NEwton 3-8835
OCALA	MAnor 2-4254
ORLANDO	GArden 2-3161
PANAMA CITY	HEmlock 6-3117
ST. PETERSBURG	7-1197
TAMPA	8-0181
WEST PALM BEACH	TEmple 2-4161
WINTER HAVEN	Cypress 3-6325

GEORGIA

ALBANY	HEmlock 2-6491
ATLANTA—Edwards-Watten Tire Co.	MUrray 6-6447
ATLANTA	JAckson 2-5035
AUGUSTA—Bowen Bros. Hardware Co., Inc.	4-5561
COLUMBUS	FAirfax 2-3561
DALTON	BRoadway 6-2221
MACON	SHerwood 3-3456
ROME	2-2546
SAVANNAH	ADams 6-0631

IDAHO

POCATELLO—Construction Tire Service	CEdar 2-5121

ILLINOIS

ALTON	3-7754
AURORA	Aurora 7-1116
BLUE ISLAND	Fulton 6-5200
CAIRO	MAin 88
CENTRALIA	5689
CHAMPAIGN	FLeetwood 2-5121
CHICAGO HEIGHTS	SKyline 5-2532
DECATUR	5298
DUQUOIN—DuQuoin Tire Mart	LInden 2-2128
FOREST PARK	FOrest 6-5100
JACKSONVILLE	CHestnut 5-6184
JOLIET	6-5461
MARION—Bowman Tire Mart	WYandotte 1-2671
MATTOON—Mack's Tire Service	ADams 5641
MOUNT VERNON—Rantman's Standard Tire Co.	60
OLNEY	EXpress 3-2137
PEORIA	4-4161
QUINCY	BAldwin 2-4800
ROCKFORD	2-6614
ROCK ISLAND	8-6174
SPRINGFIELD	3-0613
VANDALIA	616
WAUKEGAN	DEla 6-7733

INDIANA

EVANSVILLE	HArrison 5-2406
FT. WAYNE	ANthony 5166
GARY	TUrner 5-7438
HAMMOND	WEstmore 2-5100
INDIANAPOLIS	MElrose 5-3407
PERU	GRidley 2-2181
RICHMOND	2-2395
SOUTH BEND	CEntral 4-1158
VINCENNES	516

IOWA

CEDAR RAPIDS	EMpire 3-5165
DAVENPORT	2-2665
DES MOINES	CHerry 3-7278
FT. DODGE	7-2761
WATERLOO	ADams 4-4648

KANSAS

HUTCHINSON	MOhawk 2-0281
KANSAS CITY	MAyfair 2205
KANSAS CITY—Missouri Valley Tire Co.	MAyfair 1-6515
LEAVENWORTH	MUtual 2-2091
SALINA	TAylor 3-2071
WICHITA	FOrest 3-1254

KENTUCKY

LEXINGTON	2-6677
LOUISVILLE	JUniper 5-4141
PADUCAH	5-5454

LOUISIANA

ALEXANDRIA	9514
BATON ROUGE	DIckens 2-6895
BOGALUSA	REaubec 2-4254
CRETNA	FOrest 5-4271
LAFAYETTE	CEntar 4-6388
LAKE CHARLES	HEmlock 6-0647
MONROE	FAirfax 3-0186
NEW ORLEANS	JAckson 2-0191
SHREVEPORT	2-3174

MARYLAND

BALTIMORE	BEImont 5-8054
CUMBERLAND	FAirview 2-3177
HAGERSTOWN	REgent 4-4780

MASSACHUSETTS

BOSTON—Merchants Distributors, Inc.	[illegible] 4200
BROCKTON	[illegible] 0100
NORTHAMPTON	[illegible] 4848
SPRINGFIELD	RE 3-6666

MICHIGAN

DEARBORN	LUzon 1-6800
DETROIT	Forest 6-4800
ESCANABA	[illegible]Tate 6-7761
FLINT	CEdar 2-0168
GRAND RAPIDS	Glendale 9-3444
JACKSON	[illegible]Tate 6-6135
KALAMAZOO	Firestone 3-2544
LANSING	Ivanhoe 2-0621
PONTIAC	FEderal 2-0121
SAGINAW	Pleasant 2-4101

MINNESOTA

DULUTH	GRandview 2-6757
MINNEAPOLIS	FEderal 5-1745
ST. PAUL	CApitol 2-0617
ST. PAUL	Midway 5-3661

MISSISSIPPI

BILOXI	Glenwood 6-6151
COLUMBUS	FAirfax 6-7150
GREENWOOD	70
GULFPORT	[illegible]Ivanhoe 4-2872
HATTIESBURG	[illegible]Juniper 5-6474
JACKSON	Fleetwood 3-7512
LAUREL	4075
MERIDIAN	2-3728
NATCHEZ	2-1651
PASCAGOULA	[illegible]Ivanhoe 2-4255
VICKSBURG	563
YAZOO CITY	2-184

MISSOURI

HANNIBAL	117 & 118
JOPLIN	MAyfair 4-8181
KANSAS CITY	VAlentine 1-8777
MEXICO	[illegible] 3040
POPLAR BLUFF	S. Parker Tire Co. MUrray 5-9618
ST. CHARLES	RAndolph 4-3646
ST. LOUIS	FOrest 7-8300
SPRINGFIELD	[illegible]Ivanhoe 3-2561

NEBRASKA

LINCOLN	2-3357
OMAHA	MArket [illegible]
OMAHA	JAckson [illegible]

NEVADA

WELLS—B-Way Service	[illegible] 2-2714

NEW JERSEY

BRIDGETON	6-5181
CAMDEN	[illegible]Walnut 4-8181
ELIZABETH	Elizabeth 2-3666

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ALBUQUERQUE	CHapman 2-5581

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POUGHKEEPSIE — GLobe 2-8030
ROCHESTER — GLenwood 3-2838
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NORTH CAROLINA

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CHARLOTTE — EDison 3-4131
GREENSBORO — BRadford 2-3197
RALEIGH — TEmple 3-3831
WINSTON-SALEM — PArk 3-4119

NORTH DAKOTA

FARGO — ADams 2-7461

OHIO

CINCINNATI — CHerry 1-4050
CLEVELAND — PRospect 1-2650
COLUMBUS — CApitol 1-6661
DAYTON — BAldwin 3-8181
ELYRIA — FAirfax 2-3711
MANSFIELD — LAfayette 4-5131
MARIETTA — FRontier 3-2065
STEUBENVILLE — ATlantic 2-2745
TOLEDO — CHerry 3-1256
WOOSTER — Spicer Tire Company — HOward 2-6906

OKLAHOMA

ENID — ADams 4-5121
OKLAHOMA CITY — Everett 5-1147
OKLAHOMA CITY — Goodrich Tire Co., Inc. — JAckson 4-3303
TULSA — LOther 5-1221
TULSA — Tyler Motorcoach — Diamond 3-4198

OREGON

EUGENE — Diamond 5-6131
PORTLAND — BEacon 6-2196
PORTLAND — Mac Hood Recap Plant — ATwater 8-5541
SALEM — Russell Tire Service — EMpire 2-5651

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ALLENTOWN — HEmlock 3-3246
ALTOONA — WIndsor 4-9345
BETHLEHEM — UNiversity 7-4784
BUTLER — 4-3310
ERIE — 2-3205
GREENSBURG — 3767
HARRISBURG — CEdar 4-8298
HAZELTON — Schultz's — GLadstone 4-2461
JOHNSTOWN — McNally Tire & Rubber — 7-6181
LANCASTER — EXpress 2-2196
PHILADELPHIA — Pioneer 3-7134
PITTSBURGH — MUseum 2-8310
POTTSTOWN — FAculty 3-6410
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TURTLE CREEK — ELectric 1-2077
WASHINGTON — BAldwin 5-5650
WILKES-BARRE — Economy Gas & Oil Co. — VAlley 3-0168
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CLEVELAND — GReenwood 6-4573
COVINGTON — ATwater 5-4820
JACKSON — 7-6541
KINGSPORT — Little 6-8191
KNOXVILLE — Tindles Tire Co. — 5-0266
MEMPHIS — JAckson 5-6477
MORRISTOWN — Dinger 6-9311
NASHVILLE — ALpine 5-8393

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ALICE — MOhawk 4-4211
AMARILLO — DRake 4-5321
AUSTIN — GReenwood 6-8155
BAY CITY — Little 5-8329
BAYTOWN — LIndin 2-8254
BROWNSVILLE — Lincoln 2-2471
BRYAN — Brazos Tire Co. — TAylor 3-3078
CORPUS CHRISTI — TEmple 4-8841
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EL PASO — KEystone 3-2478
FORT WORTH — EDison 2-8188
GALVESTON — SOuthfield 5-8178
HARLINGEN — GArfield 3-6330
HOUSTON — CApitol 7-0141
LUBBOCK — POrter 5-5788
LUFKIN — NEptune 4-7736
MARSHALL — Manly's — WEbster 5-6776
McALLEN — MUrray 6-8354
ODESSA — Odessa Tire & Supply Co. — FEderal 7-8378
ORANGE — TUxedo 3-4321
PASADENA — GReenwood 2-0611
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SAN ANTONIO — CApitol 7-7278
TYLER — LYric 4-6305
VICTORIA — HIghland 3-6341
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NEWPORT NEWS — 6-1329
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ROANOKE — 3-7241
ST. PAUL — Tri-County Tire Service — RO 2-5301
WINCHESTER — MOhawk 2-0381

WASHINGTON

GRANDVIEW — Bill M. Vance — TUcker 2-6255
SEATTLE — MAin 1-6666
SPOKANE — MAin 4-5271
TACOMA — MAin 2-4113

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BLUEFIELD — Bluefield Ret. & Sup. — DA 5-6123
CHARLESTON — Dickens 6-0811
CLARKSBURG — MAin 1-7501
MORGANTOWN — Bob Dunmore Tire Service — 3168
PARKERSBURG — GArfield 2-6578
WHEELING — CEdar 2-8660

WISCONSIN

LA CROSSE — 4-5065
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Specify B.F.Goodrich tubeless or tube-type tires when ordering new equipment.

B.F.Goodrich Tire Co., A Division of The B.F.Goodrich Co., Akron 18, Ohio.

B.F.Goodrich *truck tires*

The B.F.Goodrich Company

CHANGES IN URBAN OCCUPANCE OF FLOOD PLAINS IN THE UNITED STATES—235 pp. University of Chicago Press, Chicago 37, Ill. $4.00.

REGULATING FLOOD PLAIN DEVELOPMENT—by Francis C. Murphy. University of Chicago Press, Chicago 37, Ill.

MINIMUM PROPERTY STANDARDS OF FEDERAL HOUSING ADMINISTRATION—315 pp. (Loose leaf, no binder). Superintendent of Documents, Washington 25, D. C. $1.75.

A GUIDE TO SIGNIFICANT CHICAGO ARCHITECTURE OF 1872 TO 1922—Box 345, Glencoe, Ill. $3.50.

THE INFLUENCE OF RESIDUAL STRESS ON THE STRENGTH OF STRUCTURAL MEMBERS—by Robert L. Ketter. Bulletin No. 44. Welding Research Council, 29 West 39th St., New York 18, N. Y. $1.00.

THE LOAD TRANSMISSION TEST FOR FLEXIBLE PAVING AND BASE COURSES—Office of Technical Services, U.S. Department of Commerce, Washington 25, D. C. 75c.

THE ALKALI AGGREGATE REACTION IN CONCRETE—Research Report 18 C. Highway Research Board, Washington, D. C. $1.00.

SCHOOL CONSTRUCTION PROBLEMS—by I. Roy Psaty. Surety Association of America, 60 John St., New York 38, N. Y.

DESIGN OF ECCENTRICALLY-LOADED COLUMNS BY THE LOAD-FACTOR METHOD—by J. D. Bennett. Concrete Publications Ltd., 14 Dartmouth St., Westminster, S.W. 1, Eng. $1.90.

TABLES FOR THE DESIGN OF BEAMS AND SLABS—by Jacques S. Colieu. Concrete Publications Ltd., 14 Dartmouth St., Westminster, S.W. 1, Eng. $1.00.

WATERBORNE COMMERCE OF THE UNITED STATES. PART 2. Waterways and Harbors Gulf Coast, Mississippi River System and Antilles—U.S. Army Engineer Division, Lower Mississippi Valley, Corps of Engineers, P.O. Box 80, Vicksburg, Miss. $1.20.

STANDARD WELDING SYMBOLS—American Welding Society, 33 West 39th St., New York 18, N. Y. $3.00.

SALT FOR ICE AND SNOW REMOVAL—Salt Institute, 33 N. La Salle St., Chicago, Ill.

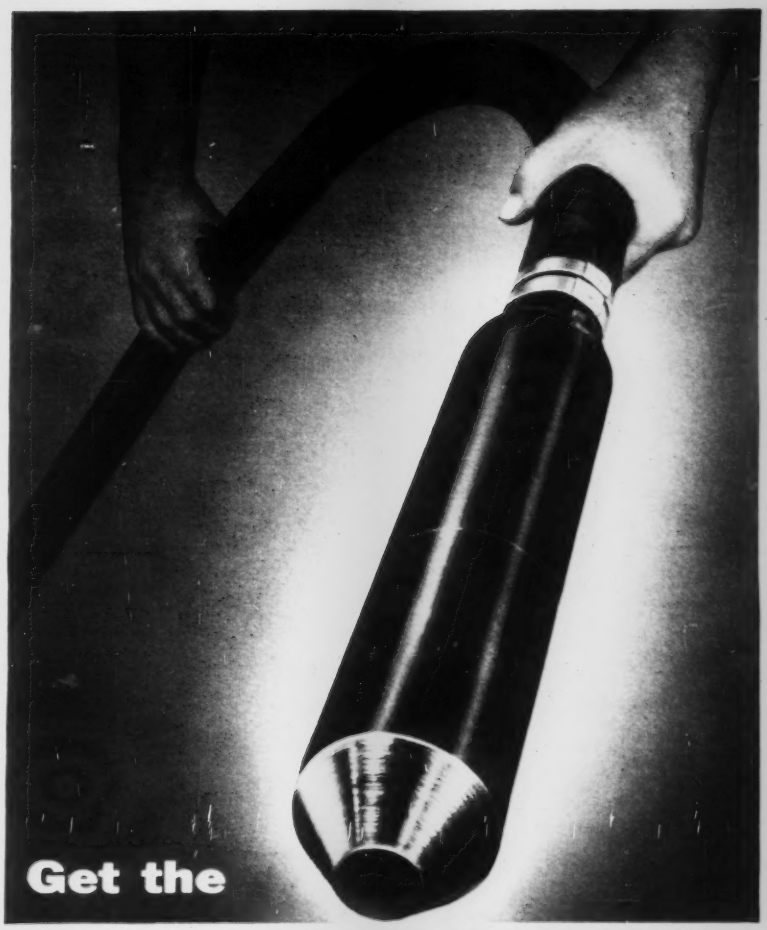
QUALITY OF GROUND WATERS IN CALIFORNIA 1955-1956—Bulletin No. 66. California Department of Water Resources, 401 Public Works Building, Sacramento, Calif.

WELD FLAW EVALUATION—by S. L. Carpenter and R. E. Linsenmeyer. Bulletin No. 42. 37 pp. Welding Research Council, 29 West 39th St., New York 18. $2.00.

GRAPHICAL COMMUNICATION—by Earl D. Black. 328 pages. McGraw-Hill Book Co., 330 West 42nd St., New York 36, N. Y. $8.00.

THERMODYNAMIC AND TRANSPORT PROPERTIES OF GASES, LIQUIDS AND SOLIDS—472 pages. McGraw-Hill Book Co., 330 West 42nd St., New York 36, N. Y. $12.50.

PRELIMINARY MAP OF LANDSLIDES OF THE PACIFIC PALISADES AREA, CITY OF LOS ANGELES, CALIFORNIA—By John T. McGill. Geological Survey, Washington 25, D. C. 50 cents.



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of a Remington concrete vibrator

You're looking at the business end of Remington's new Model EV-25 motor-in-head vibrator. Users say it's the best electric motor-in-head vibrator made, and Remington guarantees it for 6 months. The Model EV-25 is just one of 11 concrete vibrator models available from Remington. Ratings range from 1 to 6¾ hp in air, electric or gasoline-powered models. Interchangeable shafts, housings and heads enable equipment to be adapted to widely varying conditions. Mail coupon or write for performance data and specifications on the new Model EV-25 and the complete line of Remington concrete vibrators.

CHOOSE THE POWER MOST EFFICIENT FOR YOU. REMINGTON POWER-TOOLS ARE AVAILABLE IN **AIR • ELECTRIC • GASOLINE AND POWDER-ACTUATED MODELS**

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☐ Concrete Vibrators ☐ Air Tools ☐ Electric Tools ☐ Flexible Shaft Machines ☐ Chain Saws ☐ Stud Drivers

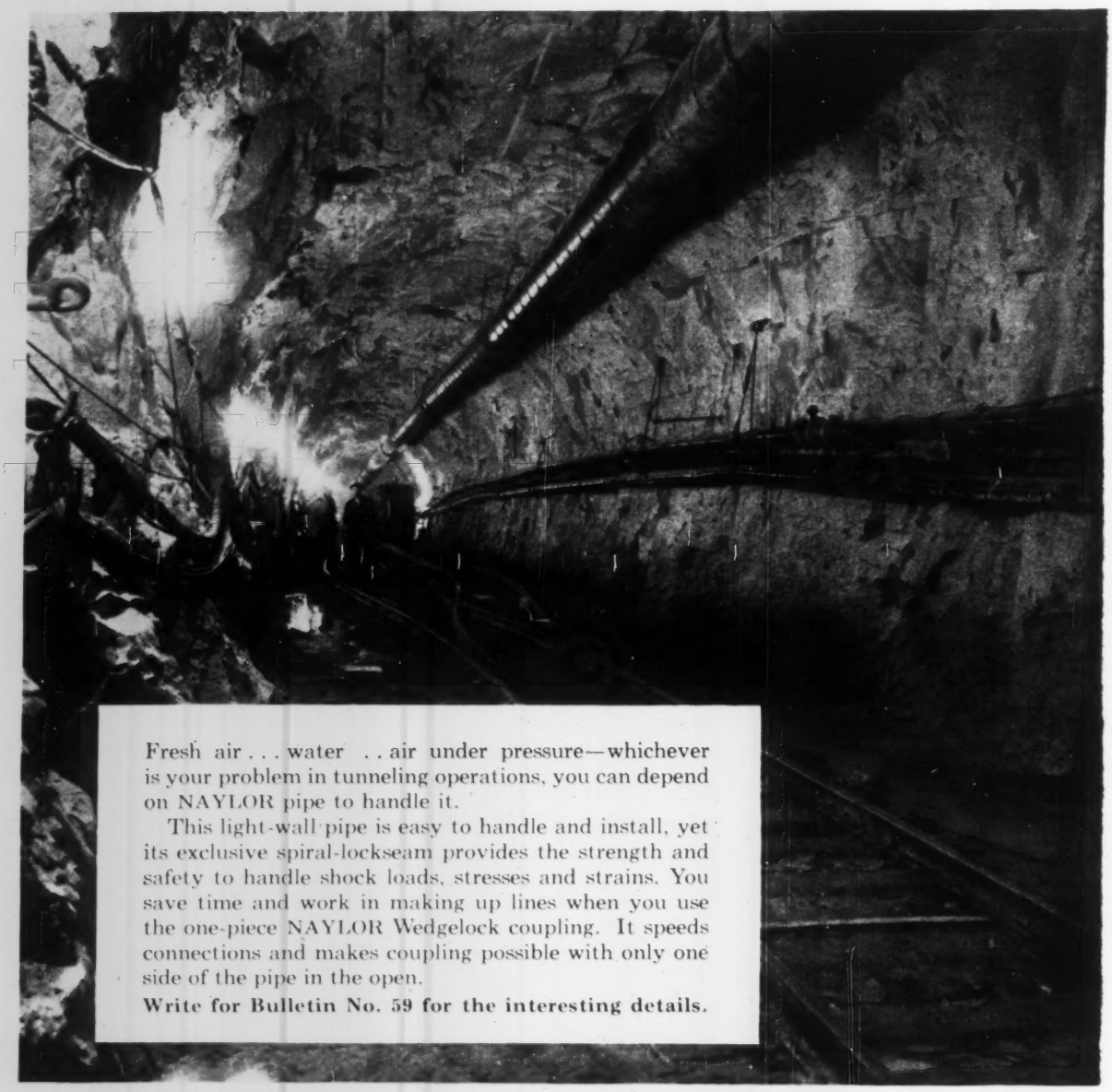
Name _____ Position _____

Company _____

Address _____

City _____ Zone _____ State _____

You Can Take It With You ...Underground!



Fresh air . . . water . . air under pressure—whichever is your problem in tunneling operations, you can depend on NAYLOR pipe to handle it.

This light-wall pipe is easy to handle and install, yet its exclusive spiral-lockseam provides the strength and safety to handle shock loads, stresses and strains. You save time and work in making up lines when you use the one-piece NAYLOR Wedgelock coupling. It speeds connections and makes coupling possible with only one side of the pipe in the open.

Write for Bulletin No. 59 for the interesting details.

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1248 East 92nd Street, Chicago 19, Illinois

Eastern U. S. and Foreign Sales Office: 60 East 42nd Street, New York 17, N. Y.

Bidding Tight for Maine Road and Bridge Job

Prices seesawed between the two low bidders for this road and bridge job in Portland and Falmouth, Maine. A low bid of 50 cents a cu yd for 210,100 yd of excavation gave W. H. Hinman, Westbrook, Me., the fractional advantage needed to take this $832,611 contract.

The award by the Maine State Highway Commission was on a bid less than 1% below the second but 12% below the high of four bids.

Contract is for 3.125 miles of grading, drainage and base course, with two parallel 30-ft wide bridges spanning a total of 280 ft each. It averages $266,456 a mile.

Minimum wages include: carpenter $1.85; tractor operator $1.50; crane and shovel operator $2.60; common laborer $1.25.

The bidding included:

1C	W. H. Hinmn, Inac., Westbrook Me	$832 611
2	Frank Rossi, Gardiner, Me	836 648
4	Bridge Constr. Corp., Augusta, Me	948 442

Bids: 1-28-59 Items	Unit	Quantity	Unit Prices 1 C	2
Clearing	ac	6	$300 00	$300 00
Removing trees, 9-24"	ea	10	10 00	50 00
over 24"	ea	3	75 00	100 00
Exc, earth	cy	210 100	0 50	0 65
struct, drainage	cy	8 500	2 50	2 50
abuts & retain walls	cy	180	3 00	3 00
piers	cy	485	5 00	4 00
muck	cy	26 000	0 65	0 65
rock	cy	10 000	2 70	3 00
struct, drainage	cy	700	20 00	15 00
piers	cy	10	15 00	20 00
fencing	lf	50	1 50	1 50
Borrow, common	cy	500	0 50	1 00
granular	cy	64 000	0 90	0 75
sand	cy	8 000	0 90	0 75
Machine aerating	hr	300	13 00	10 00
Selective thinning	ac	2	200 00	100 00
Sand base course, in pl meas.	cy	134 000	0 90	0 85
Grav. base course, in pl meas.	cy	1 600	1 25	1 25
Cr grav base crse, in pl meas.	cy	28,500	1 75	1 50
Reinf port cmt conc approach slabs	sy	58	25 00	15 00
Overhaul, in pl measure	ym	830 000	0 10	0 10
pit measure	ym	317 000	0 08	0 08
Stripping pits	cy	36 000	0 30	0 10
Sprinkling	unit	250	5 00	5 00
Calcium chloride	t	5	80 00	80 00
Grav surface course	cy	9	6 00	5 00
Stone chips	t	11	9 00	8 00
Bit conc surf crse, tp A	t	460	14 00	9 00
curb	lf	140	1 50	1 25
Road tar	gal	540	0 50	0 50
CMP, asph ctd, 12"	lf	24	3 00	3 75
15"	lf	460	4 00	4 25
24"	lf	265	7 00	7 00
30"	lf	170	14 00	9 00
bends, 15" x 6"	ea	6	50 00	55 00
conn bands, 15" x 2"	ea	13	25 00	25 00
ACCM pipe, asb bond, 72", 8 ga.	lf	220	50 00	50 00
Reinf conc pipe, 12"	lf	600	3 20	4 00
15"	lf	890	3 50	4 50
24"	lf	940	8 30	7 50
30"	lf	150	11 50	10 00
30" ext str	lf	64	13 30	11 00
Manholes, type A	ea	3	320 00	350 00
Catch basins, type F	ea	19	320 00	350 00
type G	ea	7	320 00	350 00
type I	ea	2	320 00	350 00
Underdrain, type B	lf	7 500	2 00	2 00
type C, 12"	lf	730	4 20	3 50
15"	lf	440	5 50	4 50
outlets	lf	430	1 50	1 50
End walls, met, for 24" pipe	ea	6	55 00	75 00
Portland cement concrete abuts & retain walls, substr, col, col bases, bents, coll walls, girds, struts	cy	200	30 00	30 00
	cy	235	34 00	40 00
floor slabs	cy	275	25 00	30 00
superstructure slabs	cy	270	36 00	40 00
rwy & sidew slabs, stl brl	cy	255	55 00	50 00

Bids: 1-28-59 Items	Unit	Quantity	Unit Prices 1 C	2
Portland cement concrete culv end walls	cy	15	$67 00	$50 00
box culv, sidew & wing walls	cy	210	39 00	40 00
Portland cement	bbl	2,233	5 40	6 00
conc fill, cl B	cy	25	22 00	20 00
Wrought iron scupper	ea	8	120 00	175 00
Steel, struct, fab,& deliv	lb	166,000	0 15	0 14
erect	lb	166,000	0 02	0 02
reinf, deliver	lb	208,600	0 13	0 11
place	lb	208,600	0 04	0 035
wire mesh, deliv & place	lb	25	0 40	1 00
H-beam piles, 42+ ft	lf	1,045	6 00	5 50
Membrane waterproofing	sy	700	2 30	3 00
Waterproofing joints	lf	28	6 00	4 00
French drains	cy	45	7 30	5 00
Alum rail, deliv & erect	lf	500	7 30	6 00
Cut slope drains	lf	1,300	1 60	1 50
Granite curb, type I	lf	92	5 00	5 00
Reinf conc sidewalks	sy	13	5 00	4 00
Guard rail, type E	lf	675	3 00	3 00
End wings	ea	8	6 00	6 00
Fencing, metal posts	lf	600	0 55	0 55
Riprap, hand laid	cy	90	9 00	10 00
Slope paving for bridge	sy	440	8 00	8 00
Loam excavation	cy	5,100	2 20	2 50
borrow	cy	1,750	2 50	2 50
Sodding	sy	16,000	1 20	1 25
Seeding, Parkway mixture	unit	500	11 00	12 00
Mulch, hay	t	60	75 00	65 00
Project markers	ea	2	20 00	25 00
Rt of way monuments	ea	17	13 00	13 00
remov & reset	ea	6	12 00	13 00
Underdrain outlet markers	ea	8	6 00	6 50
Port barricades, fl warn lts	ea	1	750 00	500 00
	ea	2	300 00	250 00
Chain link fence	lf	2,830	4 00	6 50

Commence: April, 1959 Complete: Fall, 1959
Liquidated damages: $150 day

Wide Underpass Separates Three-Track Crossing

This underpass at Pomona, Calif., 1,115 ft long and wide enough for two 36-ft traffic lanes in each direction, went under contract at $801,044 to John Strona & Son of Pomona.

It will separate two Southern Pacific and one Union Pacific Railroad tracks from Towne Ave.

The award was on a low bid 1% below the second but 21.9% below the engineer's estimate. DeLeuw, Cather & Co., San Francisco, is the consultant. Work is under the direction of Glenn A. Crawford, City Engineer.

A temporary trestle will be constructed to accommodate stage construction of the underpass so as not to interfere with the operation of the railroads.

Class A concrete must attain a compressive strength of 3,000 psi.

Prevailing wages include: structural iron worker $3.85; concrete finisher $3.40; tractor operator $3.71; crane & shovel operator $3.81; common laborer $2.68.

The eleven bids included:

1C	John Strona & Son, Pomona, Cal	$801 044
2	Byerts & Sons, Los Angeles, Cal	809 976
11	MacDonald & Kruse, Sun Valley, Cal	947 506
EE	DeLeuw, Cather & Co., San Francisco, and Glenn A. Crawford, City Engineer, Pomona	1 025 239

(Turn the page)

Proved Cost Saver
CURE and SEAL CONCRETE WITH 1 PRODUCT

THOMPSON'S WATER SEAL

Eliminates wet sacks, papers, hosing and spraying

Spray deep penetrating, colorless Thompson's Water Seal on fresh concrete to cure and seal in one operation. Save time . . . save labor.

Effectively controls moisture loss for 28 days and beyond.

Assures uniform curing even in hot, dry weather.

Helps reduce checking, cracking, spalling.

Produces harder, dust-free surface.

Eliminates waterproofing concrete floors.

Permits adequate time for smooth troweling.

Send for technical bulletin and Contractors Case History file.

A proved bond breaker for pre-cast, tilt up and lift slab construction. Permits easy, clean separation of slabs, walls, pre-cast members.

Available in 5 and 55 gallon drums from building supply stores, paint and hardware dealers.

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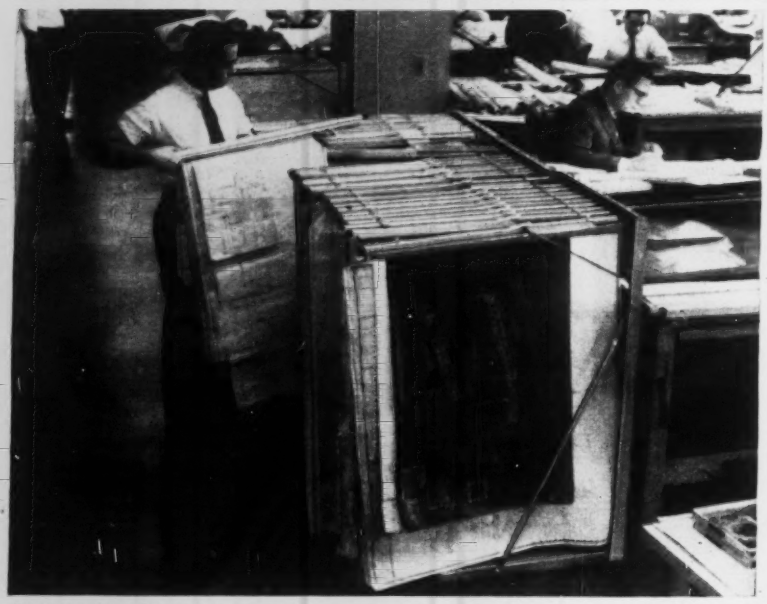
MANUFACTURERS OF FINE PROTECTIVE CHEMICALS SINCE 1929
E. A. Thompson Co., Inc., Merchandise Mart, San Francisco 3, California

San Francisco • Los Angeles • San Diego • Portland • Chicago • Seattle • Denver • Dallas • Houston • St. Louis • St. Paul • Detroit • Philadelphia • New York City • Memphis • Cleveland • Factory: King City, California

DRAFTING TRENDS



This Rolling Stand is one of many new Plan Hold units recently developed to make vertical filing more efficient.

New efficiency in vertical filing equipment

Vertical filing is a real space-saver, but home-made or "Rube Goldberg" systems have always created problems. Holes must be punched or drilled in blueprints and maps. Unsightly supports and devices must be built to hold groups of drawings and plans. None of these methods have ever been entirely satisfactory.

Now, with any one of the dozen modern Plan Hold Vertical Filing units, these problems can be eliminated.

Spring-actuated binder holds up to 100 sheets

The keystone of all Plan Hold units is the individual binder. It holds one to 100 prints safely and securely. The spring-actuated clamp is controlled by wing nuts to open and close the binder. The sheets hang wrinkle-free without curling. Binders are available for all popular sheet sizes.

Space-saving units provide maximum flexibility

The trend toward vertical filing is growing rapidly because of the flexibility offered. Plan Hold units can be installed anywhere . . . on the wall, at a table, in cabinets, closets, vaults or in rollaway units. Even hard-to-file items can be accommodated in special vertical pocket files.

The range of Plan Hold units that can handle various vertical filing situations includes space-saving wall racks, carousel-type units, rolling stands, swing-away racks and complete cabinets. They protect drawings, eliminate folding, rolling and stacking. And they provide an orderly, efficient system to accommodate and identify all large drawings.

For a complete 16 page catalog showing the full range of Plan Hold vertical filing equipment, write Frederick Post Company, 3658 N. Avondale, Chicago, Illinois.

POST

SENSITIZED PAPERS & CLOTHS • TRACING & DRAWING MEDIUMS • DRAWING INSTRUMENTS & SLIDE RULES
ENGINEERING EQUIPMENT & DRAFTING SUPPLIES • FIELD EQUIPMENT & DRAFTING FURNITURE

. . . Wide underpass

Bids: 1-26-59

Items	Unit	Quantity	Unit Prices 1 C	2
Concrete removv	ls	job	$18,000	$10,000
Pavement removv	sy	12,000	1.35	1.50
Excavation, roadway	cy	56,000	0.55	0.72
structural	cy	7,100	2.75	2.00
Backfill, structural	cy	6,490	2.38	2.00
Erosion control	ls	job	5,100	4,000
Sprinkler system	ls	job	6,071	6,000
Crusher run base	t	3,600	2.00	2.10
Asphalt prime coat	t	11	35.00	30.00
Sand blotter	t	5	5.00	6.00
Asph conc pave & prot cover	t	1,234	5.50	6.00
Redwood headers	lf	250	0.50	0.50
Conc pavement, 8"	cy	2,340	17.00	19.00
Pavement tie bars	ea	2,500	0.66	0.65
Conc, cl A, struct, 3,130 cy	ls	job	111,300	100,300
prestressed girders	ls	job	16,000	16,000
Reinf conc pumphse, & met wk	ls	job	14,000	17,000
Box culvert	ls	job	6,900	8,000
Pumping plant manifold	ls	job	1,300	1,500
Catch basin, standard	ea	2	325.00	275.00
Drop inlet, type 1	ea	9	240.00	230.00
type 2	ea	2	310.00	300.00
type 3	ea	2	300.00	275.00
Steel, bar reinf, struct, 244,400 lb	ls	job	30,650	30,000
Membrane waterproofing	sy	640	4.10	3.00
Piling furnish	lf	17,720	3.33	3.90
Piles drive	ea	710	35.30	60.00
Steel, struct, bridges, 676,400 lb	ls	job	104,000	100,000
Paint & clean struct steel	ls	job	8,000	7,500
Timber trestles, temporary	ls	job	81,000	75,000
Conc, tp A, curb	cy	66	37.85	40.00
tp B, curb & gutter	cy	360	23.50	25.00
sidewlks, drwys &medians	cy	325	24.90	28.00
Guard panels, timber	lf	200	7.43	6.00
Bridge railing, steel	lf	945	8.45	9.00
Chain link fence, 6	lf	1,910	1.51	2.00
RCP, 12", std str	lf	364	4.20	7.00
18", std str	lf	832	6.20	9.00
24", std str	lf	546	8.15	13.00
24", 3000-D	lf	128	9.80	25.00
RCP, elliptical, 29"x45"	lf	252	17.76	25.00
Conc encasements, conduits	cy	16	17.00	25.00
Perf corr met pipe	lf	890	2.33	3.00
Str & underpass ltg instal	ls	job	10,732	11,000
Traffic signal instal	ls	job	12,612	13,000
Truck scales, remov & salv	ls	job	200.00	1,000
Pump house, mech equipment	ls	job	11,300	15,000
elec equipment	ls	job	3,000	3,500
Stl pipe, mortar lined & ctd 4"	lf	168	8.63	8.00
6"	lf	30	38.96	28.00
8"	lf	260	11.69	8.00
10"	lf	430	13.60	18.00
12"	lf	74	32.50	25.00
14"	lf	356	17.50	20.00
16"	lf	30	36.25	11.00
20"	lf	748	21.55	27.00
Gate valves, 4"	ea	7	81.00	60.00
6"	ea	4	102.00	80.00
8"	ea	2	136.00	125.00
10"	ea	2	200.00	220.00
12"	ea	1	227.00	250.00
14"	ea	1	385.00	400.00
16"	ea	1	500.00	600.00
20"	ea	3	1,000	1,300
Steel casing pipe, 30"	lf	93	28.00	31.00
Fire hydrant	ea	3	195.00	353.00
VCP lateral sewers, 6"	lf	300	3.25	4.00
8"	lf	824	5.80	7.00
Manholes, 4' ID	ea	5	280.00	210.00
5' ID	ea	1	300.00	250.00
Fire service meter boxes	ea	2	510.00	650.00
Air vac & rel valv struct	ea	1	385.00	600.00
Blowoff structure	ea	2	340.00	530.00
Water services, 1" & less	ea	7	75.00	100.00
1½" & 2"	ea	3	170.00	280.00
Engineer's office	ls	job	1,320	1,000
Stairway	ls	job	1,050	1,500

Commence: 3-2-59
Completion schedule: 300 cal days
Liquidated damages: $200/day

Unit Prices, Rhode Island
1958 Weighted Average Bid Prices, Major Highway Items

Items	Unit	Wgted. Avg Unit Prices
Steel beam & posts, guard rail	lf	$2.65
Excavation, earth	cy	0.47
rock or ledge	cy	1.81
Gravel foundation	cy	0.78
Bit mac pavement, cl D, tp D-1, 8"	sy	1.33
Cmt conc base crse, crack contr, 8"	sy	2.80
Asph conc pave, cl I, tp I-1, 3"	sy	0.95
Sheet asph pave, cl J, tp J-1, 3"	sy	1.08
Cmt conc pavement, reinf, 8"	sy	3.08
Granite curb, 6x18", straight, 35-A	lf	3.27
Cmt conc curb, 10x19", straight 19	lf	2.33
sidewalks, monolothic, w fndn	sy	3.76
Bit conc sidewalks, w fndn	sy	1.59

Unit prices on major 1957 highway items were reported in ENR 6-19-58, p. 90

Coordinating "Umpteen" different suppliers

...is costly to you and your consultants

Save Time, Effort, Money with "Teamed" equipment

A multitude of suppliers, each with a product for your project, means endless conference hours coordinating equipment designs, delivery schedules, erection services. It means many extra phone calls, telegrams, voluminous correspondence!

Here's an easy, efficient way to get most of the equipment for your project — pumps, motors, control, condensers, blowers, generators, etc. from *one source*. One inquiry and Allis-Chalmers public works specialists and product specialists coordinate all products to your project design and specifications. Allis-Chalmers assumes sole responsibility for equipment delivery and continuing field service. There's no "buck passing."

Cut out all the waste of time, effort and money involved in coordinating a multitude of suppliers by contacting your A-C representative—or write Allis-Chalmers, General Products Division, Milwaukee 1, Wisconsin.

"Teamed" Equipment from Allis-Chalmers — Pumps, motors, motor-generators, motor control, condensers, blowers, hydraulic turbines and generators, water conditioning, transformers, switchgear, butterfly valves, diesel engines.

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A 5989 PW

Materials and Labor Prices

Market Quotations by ENR Field Reporters

See following ENR issues for OTHER PRICES:

- Wood Products, Glass, Explosives, Chemicals: Last, Apr. 23; Next, May 21
- Clay Products, Lime, Plaster, Paint, Roofing: Last, Apr. 30; Next, May 28
- Wage Rates, Building Board Lath, Insulation: Last, Apr. 30; Next, May 28
- Cement, Aggregate, Ready-Mixed Concrete, Asphalt: Last, May 7; Next, June 4

IRON AND STEEL PRODUCTS—PER 100 LBS. BASE MILL PRICES

	STRUCT SHAPES	PLATE CARBON STEEL	REINF BARS* billet	RIVETS ½-in. structural	SHEET PILING Base	STEEL RAILS Per Net Ton Standard	STEEL RAILS Per Net Ton Light	TRACK SUPPLIES Angle Bars	TRACK SUPPLIES Std Spikes	TRACK SUPPLIES Tie Plates	TRACK SUPPLIES Track Bolts
Birmingham Area	$5.50	$5.30	$5.675	$12.25		$110.50	$130.00	$6.975	$9.75	$6.60	.....
Chicago Area	5.50	5.30	5.675	12.25	$6.50	110.50	130.00	6.975	9.75	6.60	.....
Pittsburgh Area	5.50	5.30	5.675	12.25	6.50	110.50	130.00	6.975	9.75	6.60	$14.75
Buffalo Area	5.50	5.30	5.675	12.25	6.50	110.50	130.00	6.975	9.75	6.60	14.75
Cleveland	.....	.....	5.675	12.25	6.50	.....	.....	.....	.....	.....	14.75
Youngstown Area	.....	.....	5.675	.....	.....	.....	.....	.....	9.75	.....	.....
Geneva	5.50	5.30	.....	.....	.....	.....	.....	.....	.....	.....	.....
Los Angeles	6.20	.....	6.375	.....	6.50	.....	.....	.....	9.75	6.875	.....
Pueblo	.....	.....	.....	.....	.....	.....	.....	89.75	9.75	6.60	.....

* Fairless Works, $5.575.

IRON AND STEEL PRODUCTS—F.O.B. WAREHOUSE, PER 100 LBS., BASE PRICE

	STRUCTURAL SHAPES Per 100 lb. base price	STRUCTURAL SHAPES Extras, New York:	REINFORCING BARS Per 100 lb., base price 5 tons to carload lot New billet	REINFORCING BARS Rail steel	REINFORCING BARS Extras, New York:	EXPANDED METAL LATH Per 100 sq. yd., carload lots Std. diamond mesh, 3.4 lb.	EXPANDED METAL LATH Std. ribbed 3.4 lb.	WELDED FABRIC REINFORCING Per 100 sq ft., carload lots fob mill
Atlanta	$9.40		8.75	$8.75		$53.00	$57.00	
Baltimore	9.675		8.70‡			42.00	46.50	
Birmingham	9.00‡y		8.99‡y	8.99‡y		50.00p K	76.00p K	
Boston	10.01 K		8.75‡	8.75‡		49.50 K	54.00 K	
Chicago	9.15u		7.15gu	7.15gu		52.00‡U	63.00‡U	
Cincinnati	9.50akt		9.04‡			44.50 Kg	49.00mn Kg	
Cleveland	9.39at		7.14ct			46.50 KL	51.00 KL	
Dallas	10.40M		9.00	9.00		44.00ac	48.50ac	
Denver	10.15c K		9.25c			63.00m	69.00m	
Detroit	9.56a 9.06M		7.15Q	11.85Q		55.00O	63.00O	
Kansas City	9.82aT		8.10N			49.00	60.00	
Los Angeles	8.90dkt		7.35frt			61.00S	67.00S	
Minneapolis			9.26T	9.26T		44.50 K	49.00 K	
Montreal	7.90–8.60cCF/8.20–8.90AtF		7.00/7.50FGi	7.00/7.50FGi		65.70h	70.20h	
New Orleans			8.00gkts			48.50 K	53.50 K	
New York	9.84‡s		8.60ty	8.60y		52.00n	59.00ns	
Philadelphia	8.85/9.65‡tM		8.93/9.83‡t			46/48‡	48/52‡	
Pittsburgh	9.00y		7.35y			48.00‡ru	52.00‡ru	
St. Louis	9.48atz		7.75‡tzQ	7.75‡tzQ		61.00rez K	62.00rez K	
San Francisco	9.95aS		9.90‡S			52.00S	56.00S	
Seattle	10.20aD		8.85DM			67.00‡nD	73.50‡nD	
Toronto	9.20‡f		7.85	7.85		46.00gJ	49.00gJ	

EXTRAS, per cwt.: ◆Quantity (applies to L.T.L. shipments only): under 1,000#, +$1.80; 1000-1999#, +$1.20; 2000-4999#, +90c; 5000-9999#, +90c; 10,000-19,999#, +60c; 20,000-29,999#, +30c; 30,000-39,999#, +10c; 40,000# & up, none. ◆Size: #2 & lighter, +$2.50; #3, +$1.40; #4 +$1.00; #5 +70c; #6, #7, #8, #9, #10, #11 +50c. ◆Bending: heavy, +90c; light +$2.20 (except in New York City and surrounding metropolitan area where bending must be done on the job). ◆Engineering (details and placing from designs by others): over 500 tons, +45c; 200-499 tons, +50c but not over $1500; 75-199 tons, +65c but not over $975; 5-19 tons, +85c but not over $300; under 5 tons, +$1.00 but not over $85. Min. charge $25. Design only: +40c.

*‡ Delivered. **◆ Aver. of Canadian & American. *a 2000-9999#. *b 10,000-15,999#, fob city. *c 20 tons or over. *d 10,000-29,999#. *e Intermediate struct'l. *f Incl. delivery in free zone. *g CL. *h list price; dominion tax exempt; add provincial and municipal taxes. *i add provincial and municipal sales taxes. *j intermediate and hard grade. *k fob city. *l delivered; contractor to do unloading. *m copper alloy. *n LCL. *o asphalt coated. *p 500 sq. yd. or more. *q 2.5 lb. *r less 2% disc. for cash. *s 2,000-4,999#. *t less ½% disc. 10 days. *u add 7.5c switch. *v incl 15c del. *w truck lots. *x add 2% sales tax. *y add 15c del. *z add 10c del. *A American made. *C Canadian made. *D ½% for cash. *E 30,000# or over. *F Federal tax exempt for bldgs. *G add 10c del. *H 8.85 without tariff charges. *I 3 lb $60.00. *J 4 lb $47.50. *K less 2% disc. 10 days. *L F.o.b. Youngstown plant. *M 5,000-9,999#. *N 2,000-19,999#. *O 100 sy lots. *Q 5 tons to CL. *R: revised. *S less 2% disc. 10th. *T less ½% dics, 10th of mo. *U less 2% dics 10 days.

PLUMBING, HEATING, WATER, SEWER AND DRAIN PIPE

	C.I. PIPE PRICE INDEXα	ASBESTOS CEMENT PIPE Z per lin. ft. 6" Press Cl. 150	ASBESTOS CEMENT PIPE Z per lin. ft. 12" Sew Cl. 1500	CLAY SEWER PIPE Per ft., delivered, car load ASTM C13-54 8 in.	CLAY SEWER PIPE Per ft., delivered, car load ASTM C13-54 12 in.	CLAY SEWER PIPE Per ft., delivered, car load ASTM C200-55T 24 in.	CLAY SEWER PIPE Per ft., delivered, car load ASTM C200-55T 36 in.	CLAY DRAIN TILE† Per 1,000 ft., car load lots, f.o.b. ASTM C4-55 6 in.	CLAY DRAIN TILE† Per 1,000 ft., car load lots, f.o.b. ASTM C4-55 8 in.	CONCRETE SEWER PIPE§ Per ft., delivered ASTMC 14-55 12 in.	CONCRETE SEWER PIPE§ Per ft., delivered ASTMC 14-55 24 in.
Atlanta	130.5	$1.61	1.69	$2.36	2.48	$0.55	$1.00	$4.50	$12.50	$209.00z	$334.00	$0.92m K	$3.68m K
Baltimore	140.1	1.61	1.69	2.19	2.30	.665	1.20	5.05	12.71	187.80	289.20	1.01	2.75
Birmingham	125.8	1.61	1.69	2.26	2.37	.56r	.93r	4.60rsz	11.04rsz	296.00rz	433.00rz	1.25rS	2.75rS
Boston	143.1	1.63	1.71	2.19	2.30	.784grtL	1.512grtL	6.255grtM		215.40r	330.60r	1.56S	3.47S
Chicago	140.9	1.61	1.69	2.19	2.30	.93rm	1.75rm	7.52rm	21.16rm	220.00Hr	330.00Hr	1.30	4.00
Cincinnati	135.5	1.63	1.71	2.19	2.30	.665rt	1.285rt	4.905rt	12.505r	240.00r	370.00r	.85rAB	3.25rAB
Cleveland	141.7	1.63	1.71	2.19	2.30	.602BCN	1.215BC	4.77BC	12.505BC	155.40mBC	240.60mBC	1.35	3.60P
Dallas	137.8	1.63	1.71	2.26	2.37	.550‡B	.955‡B	4.40‡B	9.75‡B			1.25BD	2.85BD
Denver	148.2	1.71	1.80	2.36	2.48	.52rv	.96rv	3.63rv		460.00rv	580.00rv	1.05rm	3.50m
Detroit	142.1	1.61	1.71	2.19	2.30	.90mk	1.70mk	6.80mk	18.50mk	182.00mk	280.50mk	1.10k	4.05k
Kansas City	138.5	1.61	1.71	2.26	2.37	.61r	1.10‡r	4.10‡r	10.50r	303.00r	551.00r	.95r	3.25r
Los Angeles	148.6	1.70	1.79	2.19	2.30	.82bT	1.75bNS	7.10bS	16.90bNST	410.00S	500.00S	1.24eF	3.66eB
Minneapolis	149.9	1.67	1.75	2.26	2.37	.93eH	1.67eH	7.36eH				2.19DFH	6.31DFH
Montreal				1.13u		2.00u	7.00u	13.50u		288.00	545.00	1.17D	3.13‡pD
New Orleans	133.3	1.61	1.69	2.26	2.37	.52rv	0.983r	5.43r		210.50‡r	468.00	1.41‡r	3.76‡r
New York	138.5	1.63	1.71	2.19	2.30	1.02	1.49N	7.58	19.48			1.50‡B	3.60‡B
Philadelphia	137.8	1.61	1.69	2.19	2.30	.68‡	1.31‡	5.13‡r	14.25‡r	300.00‡	350.00‡	1.75‡h	4.20‡h
Pittsburgh	142.9	1.63	1.71	2.19	2.30	.602	1.16	5.14	22.71	190.00	295.00	1.66Dh	3.98Dh
St. Louis	136.9	1.61	1.69	2.26	2.37	.62r	1.15r	4.92r	12.68rS	200.00r	400.00r	1.50‡	3.65
San Francisco	148.6	1.70	1.79	2.19	2.30	.861d	1.561d	7.531d	18.00‡d	360.00‡‡	620.00‡‡	1.052Q	3.302Q
Seattle	149.0	1.71	1.80	2.19	2.30	.83bS	1.83bS	7.61k		250.00‡rk		1.95rk	4.55rk
Toronto				.80F		1.50F	6.00F			157.00F	280.00F	1.05F	4.62F

*‡ Extra quality. *§ Extra strength. *‡ delivered. *α PRICE INDEXES for CENTRIFUGAL CAST IRON PIPE. Include carload freight allowed to city. These also serve as the HISTORICAL RECORD of THE $ PER NET TON PRICE of CLASS B, B&S, PIT CAST IRON PIPE. F.O.B. Foundry Price Indexes Birmingham, Ala., 125.8; Burlington, N. J., 134.6. *b Extra strength. *c 4-in., $130. *d SS361-A. *e 21 in. *g culvert pipe; reinf., ASTM C 75-56. *h reinf., ASTM C 75-54. *i reinf., ASTM C 76-55. *j centrispun. *k less 2% disc. for cash. *l fob plant. *m truck del. *n LCL del., fob truck. *p less 5% disc. 10th. *q freight allowed to destination in city. *u 35,000-minimum. *r less 2% disc 10 days. *s 1 ft lengths. *u CSA A 60. *v standard strength. *w SS; add 20% for d.s. *x fob city. *y Reinforced. *z Upper value in range based on both truck lots and less than truck lots, fob city; lower value truck lots delivered. *A single strength. *B truckload. *C less 2% disc. 5th. *D ASTM 76-57. *E less 1% disc. 10 days. *F less 2% disc. 30 days. *G LCL. *H CL. *I fob origin, freight allowed. *J reinf., B14-15. *K Less 2% disc. 15 days. *L ASTM 13-57. *M ASTM 200-57. *N 2 ft. lengths. Trucklots. *O add 2% Sales Tax. *P 18 in. *Q less 1% disc. 10th. *S ASTMC 72, 12" 1.55, 24" 4.00. *T extra strength.

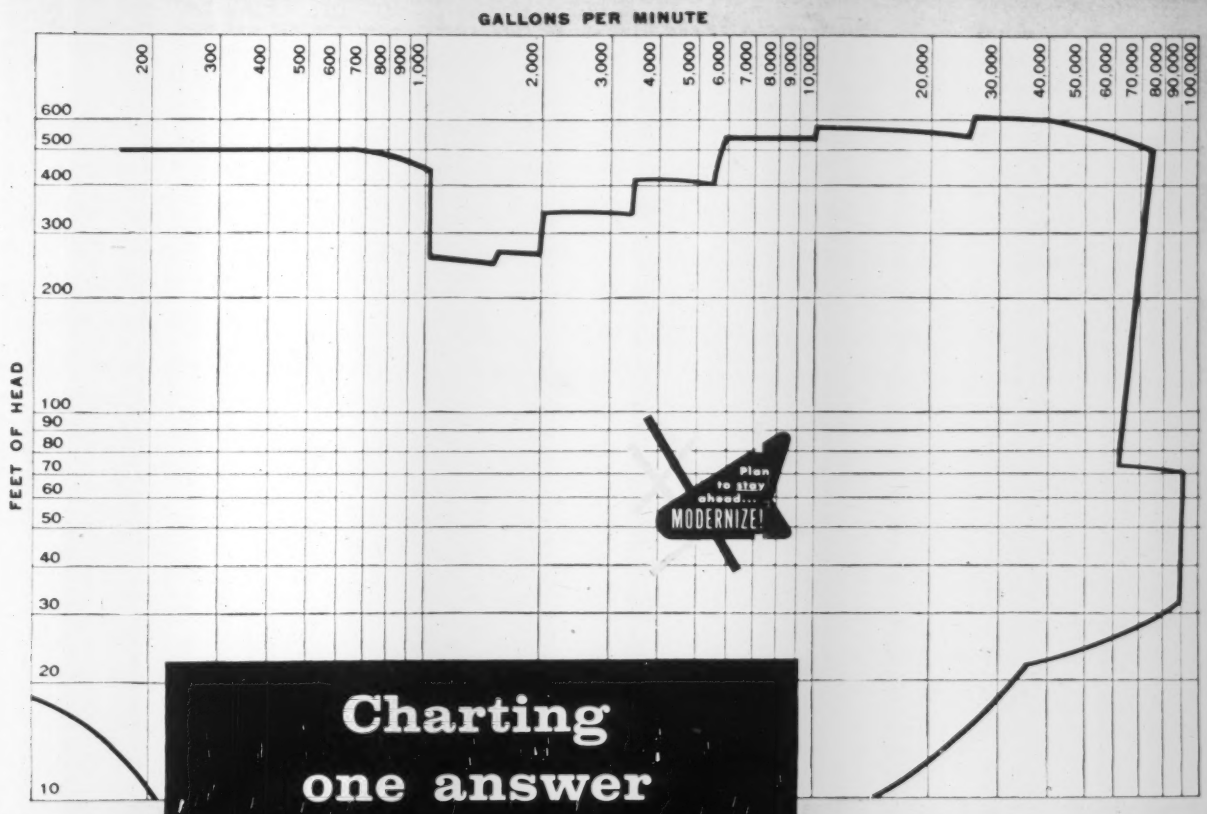
*WROUGHT STEEL PIPE (Full standard weight) Discount from list; see footnote

Mill	3½ to 6 in., Lap Weld* Galv. %	3½ to 6 in., Butt Weld* Black %	3½ to 6 in., Butt Weld* Galv. %	2½ & 3 in., Butt Weld* Black %	2½ & 3 in., Butt Weld* Galv. %
Lorain, Ohio	+ 2.00‡	+ 18.75‡		13.75	+ 2.50
Aliquippa, Pa.	+ 3.25a	+ 11.00a		13.75	+ 3.50
Sharpsville, Pa., Mid				17.25	+ 1.00
Sharon, Pa.				13.75	+ 2.50
Wheatland, Pa.				13.75	+ 2.50
Etna, Pa.				13.75	+ 2.50
Fontana, Calif.				12.75	+ 2.50
Beaver Falls, Pa.	3.25	+ 13.50a	3.25b	+ 2.50	
Beaver Falls, Pa.	2.25	+ 13.50a	2.25b	+ 2.50	
Beaver Falls, Pa.				13.75	+ 2.50
Beaver Falls, Pa.				13.75	+ 2.50
Beaver Falls, Pa.				13.75	+ 2.50
Beaver Falls, Pa.				12.75	+ 2.50
Monessen, Pa.	3.25	+ 13.50a	3.25b	+ 2.50	
Monessen, Pa.	2.25	+ 13.50a	2.25b	+ 2.50	
Monessen, Pa.				13.75	+ 2.50
Monessen, Pa.				13.75	+ 2.50
Monessen, Pa.				13.75	+ 2.50
Monessen, Pa.				0.75	+ 15.50b
Youngstown, O.	+ 9.75‡	+ 15.50b			
Indiana Harbor, Ind.					

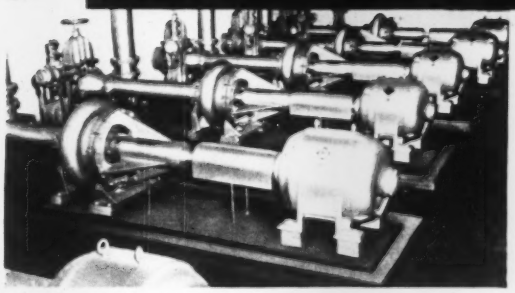
* Threaded and coupled. a 3½ to 4 in. weld. b Continuous r to 1.5 and 6 in. ‡ Seamless

* WROUGHT STEEL PIPE: Deduct discounts shown above from the following standard list consumers carload prices to get mill price. List prices per ft. based on approx. $200 per net ton: Butt Weld ⅛ in., 8½¢; ¼ in., 8¢; ⅜ in., 8¢; ½ in., 8½¢; ¾ in., 11½¢; 1 in., 17¢; 1¼ in., 23¢; 1½ in., 27½¢; 2 in., 36¢; 2½ in., 58½¢; 3 in., 78½¢. Lap Weld 3½ in., 92¢; 4 in., $1.09; 5 in., $1.48; 6 in., $1.92. continuous weld same as lap weld prices. Add freight, 3% transport tax for destination price. † Production discontinued November 1957.

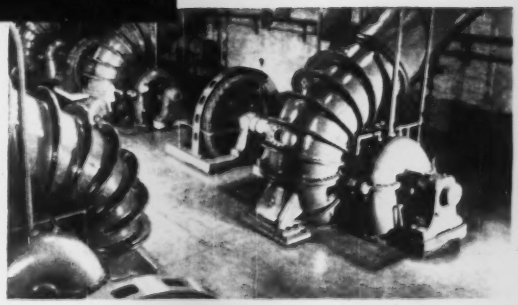
WROUGHT IRON PIPE: List prices per ft. same as for wrought steelpipe, but add following "discounts" to get Pittsburgh mill price: Butt Weld—1 in. black, + 65.54, galv., + 95.77; 1¼ in. black, + 65.54, galv., + 95.23; 1½ in. black, + 61.79 galv., + 91.22; Lap Weld—2½ in. to 3 in. black + 67.95 galv. + 95.77; 4½ in. to 6 in. black + 64.74 galv. + 90.88 Add freight rates plus 3% transportation tax to get destination price.



Charting one answer for every pumping need



Auxiliary service is the job for six 10 x 8 A-C pumps. They are driven by Allis-Chalmers motors.



Main station application involves 12 A-C 72-inch Type SP pumps like that shown.

From the smallest auxiliaries to giant, main system pumps, the range chart for Allis-Chalmers pumping units covers practically every public works requirement. This outstanding one-source equipment availability is a good reason why A-C should be given "first call" in modernizing the pumping facilities of your municipal system.

And complete line is only one "plus" for Allis-Chalmers. Teamed motors and control; customized standardization of parts and materials; engineering assistance and nationwide service are others.

Whatever your need in centrifugal pumps (and A-C builds units even beyond the chart shown), contact your representative or distributor. For additional information, write Allis-Chalmers, General Products Division, Milwaukee 1, Wisconsin.

ALLIS-CHALMERS A-C

A-1023-PW

Bids Asked—Low Bidders—Contracts Awarded—

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 36, N. Y., ELSIE EAVES, Manager
J. A. MAHONEY, M. WETZEL, M. E. SCIORRA, D. TARTAGLIA, MARIE MORAVSIK, ELAINE CHOMYAK, ELIZABETH WERRA, ELEANOR QUERET, Reports, J. H. WEBBER, E. R. HUBER, Statistics.

NEW ENGLAND

HEAVY CONSTRUCTION—BA

Mass., Attleboro—BA 5/22—City, Dpt. P. Wks., City Hall, water dam and reservoir, Manchester Pond. Approx. $600,000. Plans deposit $50. Julian White, 6 Beacon St., Boston, engr. CD 7/28.

BUILDINGS—BA

Mass., Revere—SCHOOL—BA 5/24—City, Sch. Dept., 153 Beach St., R., elementary school, Newhall and Sargent Sts. $650,000. Plans deposit $100. Harold M. Turnell, 1025 Revere Beach Parkway, Revere, archt. CD 12/16.

R. I., South Providence—CLUBHOUSE—BA 6/3—Providence Boys Club, 226 S. Main St., Providence, clubhouse, French, Oxford and Louisa Sts. $500,000. Plans deposit $100. Baker & Turoff, 335 Angell St., Providence, archts. Eugene E. Boudreau, 42 Loraine Rd., Westwood, Mass., engr. CD 10/14.

HEAVY CONSTRUCTION—LB & CA

▲† Davison Constr. Co., Inc., 1306 A Elm St., Manchester, N. H., CA $1,851,000, tracking and data acquisition station, Air Force Bombing Range, NEW BOSTON, N. H. U. S. Eng., 424 Trapelo Rd., Waltham, Mass. Bids Apr. 28. CD 4/30, under LB.

MASSACHUSETTS—Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston.

Peter Salvucci & Son, Inc., 55 Pond St., Waltham, Mass., LB $653,006, relocating highway and bridge Rte. 2, FAP F-448 (5), Athol and Phillipston. Bids Apr. 28. CD 4/14.

BUILDINGS—LB & CA

Joseph P. Flynn, 48 Custom House St., Providence, R. I., LB $662,622, est. $900,000, OFFICE, PROVIDENCE, R. I., City, City Hall, Providence, R. I. Bids Apr. 28. CD 4/13.

Fontaine Bros. Inc., 40 Hendrick St., Chicopee Falls, Mass., LB $619,617, est. $650,000, Proj. 400 ELEMENTARY SCHOOL, Shea's Field, AGAWAM, MASS. Town, School Bldg. Comm., Town Hall, Agawam, Mass. Bids Apr. 27. CD 4/2.

Green Manor Constr. Co., Inc., 382 W. Middle Turnpike, Manchester, Conn., CA $400,000, BOWLING CENTER, Manchester Shopping Parkade, MANCHESTER, CONN. American International Bowling Corp., 382 W. Middle Turnpike, Manchester, Conn. Philip J. DiCorcia, 476 W. Middle Turnpike, Manchester, Conn., archt. Jerome F. Mueller, 35 Lewis St., Hartford, Conn., engr. Francolino & Lapak, 744 Asylum Ave., Hartford, Conn., structural engrs. Awarded Apr. 29. CD 4/6.

▲ Carmo B. Primus, et al., 56 Harlan St., Manchester, Conn., Owner Builds, $2,320,000, 232 HOUSES, Mill St., SOUTHINGTON, CONN.

MIDDLE ATLANTIC

HEAVY CONSTRUCTION—BA

† New York—BA 5/27, Soil Conservation Service, U. S. Dpt. Agriculture, 216 West Genesee St., Syracuse, Zone 2, streambank protection work on Cazenovia Creek, sub-watershed of Buffalo Creek Watershed, vicinity South Wales, Erie Co. Inv. Bid SCS-9-NY-59. Plans deposit $25. CD 3/16.

N. J., Linden—BA 6/2—Common Council of the City of Linden, Council Chamber, City Hall, storm drain, appurtenances, Storm Drainage Relief Proj., Eighth Ward, Contr. 3. Plans deposit $25. Alexander Potter Assocs., 50 Church St., New York, N. Y., consult engrs. CD 10/7/57.

N. Y., New Rochelle—BA 6/5—Arthur F. Jonas, P. E., deputy dir. P. Wks., City Hall Annex, 2nd Fl., 30 Church St., Contr. 1, general construction; Contr. 2, furnace, Contr. 3, chimney, Contr. 4, plumbing, Contr. 5, heating and ventilating and Contr. 6, electrical constr., municipal incinerator, Proj. No. 10-42e P1. Plans deposit $25. Leonard S. Wegman Co., Grand Central Terminal, New York, Zone 17, engrs.; adv. ENR 5/14. CD 9/9/48.

HEAVY CONSTRUCTION—LB & CA

▲ The Arthur A. Johnson Corp., 347 Madison Ave. and Peter Kiewit Sons' Co., 122 E. 42nd St., New York, N. Y., LB $1,118,110, est. $1,220,543 (6 Bidders), Constr. US-23, 60 ft. gates and related work at Guard Gate 1 and Guard Gate 2 and new bridge and approaches at Guard Gate 2, Waterford, Saratoga Co., NEW YORK. Henry A. Cohen, dir. Bureau Contracts, State Office Bldg., Albany, N. Y. Bids Apr. 30. CD 4/10.

▲ Queens Structure Corp., 32-57 57th St., Woodside, N. Y., CA $2,102,218, Throgs Neck Bridge Contr. No. TN-12C, Bronx Plaza Roadway and Cinder Storage Structure, Bronx Boro, NEW YORK, Triborough Bridge & Tunnel Auth., Administration Bldg., Randall's Island, New York 35, N. Y. Bids Mar. 31. CD 4/2, under LB.

▲ W. H. Greene Co., Carman Ave., Westbury, N. Y., CA $2,797,959, lateral sewers, Herricks, Williston Park, East Williston and vicinity, Sewage Collection Dist. No. 2-AW, Contr. No. 1002-2-AW-1, Town of North Hempstead, MINEOLA, N. Y. County Executive, Nassau County, Old County Courthouse, Mineola, N. Y. Bids Mar. 31. CD 4/6, under LB.

▲ Westinghouse Air Brake Co., 150 5th Ave., New York 11, N. Y., CA $3,037,578, furnishing, installing block signaling and interlocking equip. for rehabilitation Lexington Ave. Line, IRT Division, north of 42nd St. to north of 86th St., Contr. No. S-102, Manhattan Boro, NEW YORK, N. Y. New York City Transit Auth., 370 Jay St., Brooklyn 1, N. Y. Bids Feb. 27. CD 4/3, under LB.

▲† U. S. Eng., 2635 Abbottsford Ave., Phila., Pa., cancelled bids to have been opened May 5, dredging Delaware River, Allegheny Ave. to Benjamin Franklin Bridge, opposite Andalusia, Pa. and Delanco, N. J., ENG-36-109-59-65B, PENNSYLVANIA and NEW JERSEY. Est. $2,000,000. Will re-advertise. CD 4/7.

James Julian, Inc., 405 duPont Rd., Elsmere, Del., CA $525,337, interceptor sewers, lift stations and force mains, SALISBURY, MD. City, City Hall, Salisbury, Md. Bids Mar. 26. CD 4/3, under LB.

BUILDINGS—LB & CA

Frajack Bldg. Corp., 1458 E. 7th St., Brooklyn 30, N. Y., Owner Builds, $400,000, 22 HOUSES, East 88th St., BROOKLYN, N. Y. Kallich & Weinstein, 161 Remsen St., Brooklyn 2, N. Y., archts.

Farragut Constr. Corp., 5005 Avenue D, Brooklyn 3, N. Y., Owner Builds, $892,500, 51 HOUSES, E. 82nd and E. 83d Sts., BROOKLYN, N. Y. Morris Rothstein & Son, 186 Joralemon St., Brooklyn 2, N. Y., archts.

103 Bldg. Corp., 761 E. 102 St., Brooklyn 12, N. Y., Owner Builds, $720,000, 40 HOUSES, E. 101, E. 100 and E. 99 Sts., BROOKLYN, N. Y. Morris Rothstein & Son, 186 Joralemon St., Brooklyn 2, N. Y., archts.

▲ Leon DeMattheis & Sons and Leon DeMattheis Constr. Co., 827 Elmont Rd., Elmont, N. Y., CA $3,625,820, fdns. and general contract, Base Bid A, rein. con. design, Woodrow Wilson HOUSES, Proj. No. NY-89, E. 106th St., Franklin D. Roosevelt Dr., E. 105th St. and 1st Ave., Manhattan Boro, NEW YORK, N. Y. New York City Housing Auth., 299 Broadway, New York 7, N. Y. Bids Apr. 3. CD 4/7, under LB.

Calvert & Manor Homes, c/o 20th Century Homes, 168-10 Hillside Ave., Jamaica, N. Y., Owner Builds, $425,000, 25 HOUSES, Manetto Hill Rd., PLAINVIEW, N. Y.

Gallagher & Co., Flourtown, Pa., CA $400,000, SHOPPING CENTER, sewage disposal sys., AUDUBON, PA. Tornetta, Inc., 832 Dekalb St., Norristown, Pa. William Dean Faint, 1915 Browning Rd., Pennsauken, N. J., archt.

Frank Cussoni, Jr., 220 W. 12th Ave., Conshohocken, Pa., Separate Contracts, Over $400,000, RESIDENTIAL DEVELOPMENT, 9th St., etc., CONSHOHOCKEN, PA.

Costello Bros., Fort Washington, Pa., Separate Contracts, $450,000, RESIDENTIAL DEVELOPMENT, Toland Dr., etc., LAFAYETTE HILL, PA.

McClain Constr. Co., Inc., 200 S. 13th St., Phila., Pa., LB $943,800, general contract, Rose Tree Union JUNIOR HIGH SCHOOL and sewage disposal plant, LIMA, PA. Central Delaware County Jt. School Auth., Lima, Pa. Bids Apr. 23. CD 4/10.

William Sterling & Co., Inc., 2525 Pine St., Phila., Pa., LB $453,920, general contract, PHYSICAL SCIENCE BLDG. for Lincoln University, LINCOLN UNIVERSITY (OXFORD P. O.), PA. General State Auth., 18 and Herr Sts., Harrisburg, Pa. Bids Apr. 29. CD 4/1.

Bishop Hollow Estates, Inc., Edgemont Inn, Edgemont, Pa., Separate Contracts, $562,500, RESIDENTIAL DEVELOPMENT (25), Bishop Hollow Rd., etc., NEWTOWN SQUARE, PA.

▲ Russell J. Mangano, 2629 S. Mole St., Phila., Pa., Separate Contracts, $1,300,000, RESIDENTIAL DEVELOPMENT (40), Buttonwood Rd., etc., PAOLI, PA.

John P. Donovan, Lewis Tower Bldg., Phila., Pa., CA $990,000, CLASSROOM BLDG., PHILA., PA., St. Josephs College, 54th St. and City Line, Phila., Pa. Harkins, & Alvare, Flourtown, Pa., archts., Julius Dorfman, 1411 Walnut St., Phila., Pa., engr. CD 3/30, under LB.

▲ John McShain, Inc., 17th and Spring Garden Sts., Phila., Pa., CA $1,000,000, 10 story, 99x130 ft., brick, steel, rein.-con. PARKING GARAGE, 219-225 S. Broad St., PHILA., PA. Broad-Locust Garage Corp., c/o Wallace & Warner, archts., Lancaster and Martin Sts., Bryn Mawr, Pa. Schulcz & Padlasky, 1630 Spruce St., Phila., Pa., engrs.

▲ Barkley Homes, Inc., Charles and Passmore Sts., Phila., Pa., Separate Contracts, $5,000,000, 109 unit APARTMENT, Wissahickon and Midvale Aves., PHILA., PA. George S. Idell, 117 S. 17th St., Phila., Pa., archt.

Tilghman Hauseman, Pottstown, Pa., CA $400,000, Jax Lanes, BOWLING ALLEY, POTTSTOWN, PA. Harold Cornfeld, Pottstown, Pa.

Edward J. O'Brien, Jr., 101 Hunter Rd., Plymouth Meeting, Pa., Separate Contracts, Over $450,000, RESIDENTIAL DEVELOPMENT, Plymouth Rd., etc., PLYMOUTH MEETING, PA.

Villawood, Inc., Room 632, 1325 Walnut St., Phila., Pa., Separate Contracts, $400,000, RESIDENTIAL DEVELOPMENT, Stone Ridge Lane, etc., ROSEMONT, PA. Henry S. Berg, 1411 Walnut St., Phila., Pa., archt.

▲ J. A. Volpe Constr. Co., 261 Constitution Ave., N. W., Wash., D. C., LB Est. $2,000,000 (6 bidders), HEADQUARTERS BLDG., between 16th and 17th Sts. on P St., N. W., WASH., D. C. American Trucking Assn., Inc., 1424 16 St., N. W., Wash., D. C. Bids Apr. 8. CD 4/19.

▲ E. I. duPont de Nemours, 2 Co., duPont and Nemours Bldg., Wilmington, Del., Dan Forces, $6,000,000, 3 story, RESEARCH LABORATORY for Elastome Chemicals Dpt., WILMINGTON, DEL. CD 8/21/46.

▲ Barkley Homes, Inc., Charles and Passmore, Phila., Pa., Separate Contracts, $1,520,000, RESIDENTIAL DEVELOPMENT (152), WILMINGTON, DEL.

SOUTH

HEAVY CONSTRUCTION—BA

▲ Ky., Louisville—TERMINAL BLDG. ADDN.—BA 5/20—Louisville & Jefferson County Air Bd., Lee Terminal Standiford Field, Lee Terminal Standiford Field addns., parking, ramps, runway paving, $1,400,000. Arrasmith & Tyler, 501 Park Ave., archts. Southern Eng. Co., 322 W. Jefferson St., Zone 2, mechanical engr. CD 12/3.

▲ N. C., Mt. Airy—BA 6/2—City, City Hall, sewage treatment plant, outfall sewer, $1,600,000. J. N. Pease & Co., 2925 N. Independence Boulevard, Charlotte, engrs. CD 4/2.

BUILDINGS—BA

S. C. Clemson—DORMITORY—BA 5/28—Clemson College, Student Dormitory addns., $500,000. Lyles, Bissett, Carlisle & Wolff, 1421 Bull St., Columbia, archts. CD 5/4, under LB.

(Continued on page 153)

PROJECTS COVERED

By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $53,000, other public works $88,000, industrial buildings $110,000; other buildings $400,000. Also Foreign projects of $1,000,000 and more in size of Interest to American contractors.

By Regions & Classes of Construction
(In order of Listing)

BIDS ASKED
LOW BIDDERS
CONTRACTS AWARDED
New England — Middle West
Middle Atlantic — West of Mississippi
South — Far West

PROPOSED WORK
Water Supply — Public Buildings
Sewers, Waste Disposal — Mass Housing
Bridges — Commercial Buildings
Streets & Roads — Industrial Buildings
Earthwork, Waterways — Unclassified

In These Stages

PROPOSED WORK: Before and including appointment of engineers or architects.

BIDS ASKED: BA (new announcements only). For full calendar, see also preceding issues.

SOON LETS CONTRACT: SLC

LOW BIDDERS: LB On jobs below $500,000 in value all low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.

CONTRACTS AWARDED: CA Except awards to low bidders previously reported in low bidder stage.

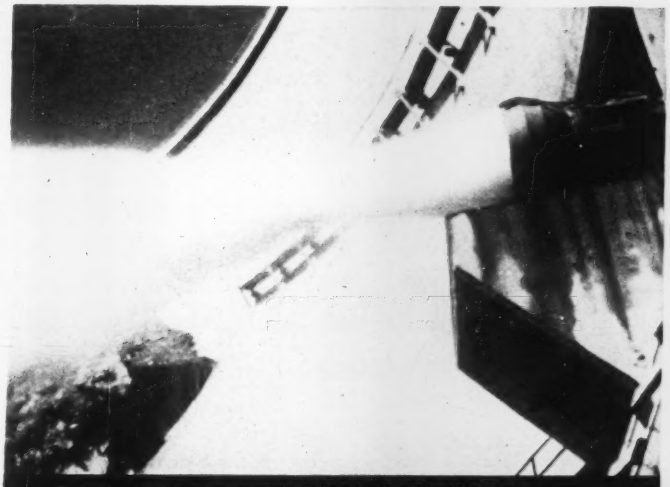
CD dates shown are of Construction Daily Issue in which last previous report was published.

OWNERS, ENGINEERS, ARCHITECTS, CONTRACTORS are invited to report their new jobs for listing in these reports when they meet or exceed the size minimums shown above. Address these news releases to J. A. Mahoney, REPORTS, ENGINEERING NEWS-RECORD, 330 W. 42 St., New York 36, N. Y.

Symbols and Abbreviations Include:

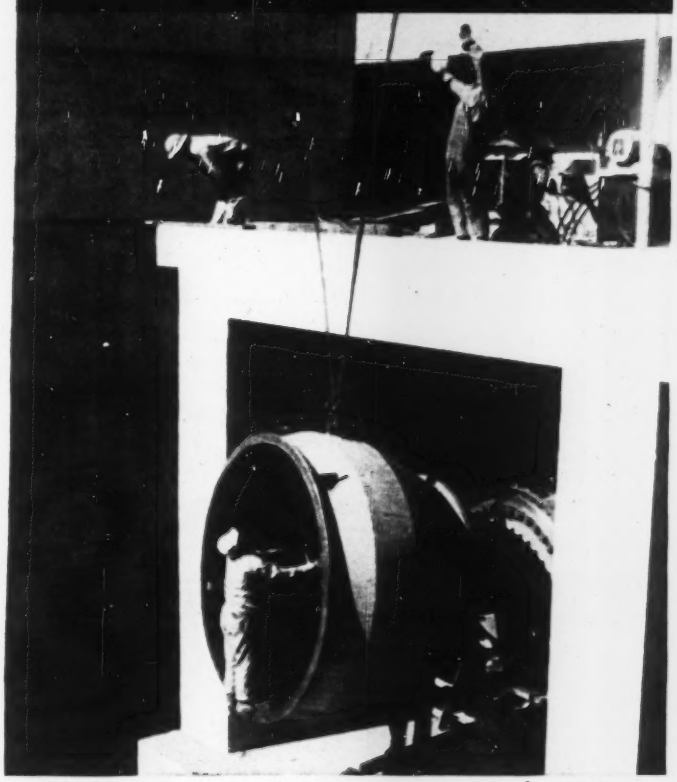
† Federal Government
▲ Project of $1,000,000 or over
ENR Engineering News-Record
CD Construction Daily

For additional reports see Construction Daily.



This 18-inch Ring-Jet Valve, installed by the City of Bremerton, Washington, is manually operated. Under a 115-foot design head, it discharges 76 MGD when fully opened. Note how the hood concentrates the discharge stream.

One of two 66-inch A-C Ring-Jet Valves during final assembly at Tulloch Dam, California. These valves are used for an irrigation bypass, operate under a 145-foot head.



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for easy regulation and control of water under free discharge

Allis-Chalmers Ring-Jet Valves are a logical development from the Howell-Bunger Valve. For use under high- and low-head, free-discharge conditions, the A-C Howell-Bunger creates a substantial amount of spray in providing maximum dispersion to minimize erosion. Now, in the A-C Ring-Jet Valve, the addition of a steel hood creates a concentrated jet, reduces spray, and helps dissipate the energy in the discharged water.

This new A-C Ring-Jet Valve gives you the simple construction, radially-balanced hydraulic design and easy operation of the A-C Howell-Bunger Valve, while very nearly matching its high discharge coefficient. Ring-Jet Valves are available with standard manual and/or motor-driven operators. Hydraulic operation can be provided, and is especially applicable to the larger sizes and higher head applications.

To obtain complete information on the A-C Ring-Jet Valve, contact your nearest Allis-Chalmers office, or write Allis-Chalmers, Hydraulic Division, York, Penna.

Hydraulic Division

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WEISS DAM, ALABAMA — A struck capacity of 40 cu. yds. makes the M-R-S Model 250-HW tractor-scraper the world's largest hydraulic tractor-scraper combination. And with powerful 600-h.p. engines pushing them to speeds of 34 miles an hour, these units need the finest stopping power available.

That's why M-R-S uses new B.F.Goodrich Hi-Torque Brakes. Now at work on the Weiss Dam Project, M-R-S scrapers move heaping loads at high speeds along a ¾ mile haul. And they make each round trip with complete safety, because B.F.Goodrich Hi-Torque Brakes stop *twice as fast* as conventional brakes, with less chance of brake fade.

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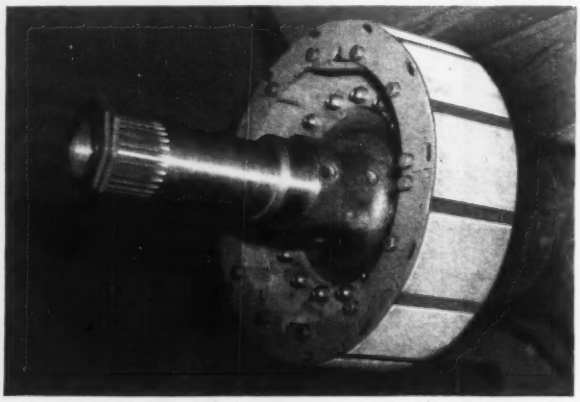
B.F.Goodrich Hi-Torque Brakes on the M-R-S 250-HW tractor-scrapers enable operators to control the placement and depth of spreads, even on steep grades. So next time you buy tractor-scrapers, dump trucks or any other wheeled off-road vehicles, remember that B.F.Goodrich Hi-Torque Brakes reduce cycle time — provide greater safety — cut expensive maintenance. Ask your equipment manufacturer for details, or write: *B.F.Goodrich Aviation Products, a division of The B.F.Goodrich Company, Dept. EN-59, Troy, Ohio.*



B.F.Goodrich *Hi-Torque brakes*

(Continued from page 150)

S. C., Charleston — LIBRARY, BA, 6/2—Charleston County Council, Courthouse, free library, $600,000. Halsey, Cummings, McCrady, 12 Exchange St., archts.-engrs. CD 2/9.

HEAVY CONSTRUCTION—LB & CA

▲ VIRGINIA—Commonwealth of Va., Dpt. Hys., 1221 E. Broad St., Richmond. Bids opened 4/29.

Rea Constr. Co., Inc., Box 1092, Charlotte, N. C., LB $1,569,955 (17 bidders), 8 bridges, Washington Circumferential Hy. Rte. 413, Contr. B-4, State Proj. 0413-029-002-B20, B21, B22, B23, B24, B25, B26, B27, Fed. Proj. I-213-1 (8), Fairfax Co. CD 4/9.

▲ VIRGINIA—Commonwealth of Va., Dpt. Hys., 1221 E. Broad St., Richmond. Bids opened 4/29.

Va.—E. V. Williams Co., Inc., 1269 E. Princess Anne Rd., Norfolk, Va., LB $117,149 (4 bidders), 3.441 mi. 20 ft. x 8 in. aggreg. base, Type II, bit. surf. treat. beginning 0.563 mi. N. of Int. Rte. 604 (Susan P. O.) ending 0.027 mi. S. Int. Rte. 611, Rte. 14, State Proj. 0014-057-008, Fed. Proj. S-944 (3), Matthews Co.;

Va.—W. W. Warsing, Rockfish, Va., LB $237,323 (9 bidders) 0.308 mi. 36 ft. and variable x 5½ in. bit. pavement, bit. top, curbs and gutters, sidewalk and bridge beginning 0.216 mi. S. NCL Farmville and ending 0.152 mi. N. of NCL Farmville, Rte. 45, State Proj. 0045-144-001; 0045-024-001-002, Fed. Proj. S-638 (2), Cumberland Co. and Tn. of Farmville, CD 4/9, under Bridges;

Va.—Thomas M. Nunnally Co., Erwin Lane, Fairmount, W. Va., LB $141,737 (4 bidders), 0.73 mi. 22 ft. x 6 in. aggreg. base Type I, 3 in. pen. mac. top, bit. surf. treat. and bridges and approaches over Russell Fork River, Rte. 83, State Proj. 0083-025-101, C1, B1, Fed. Proj. F-022-1 (13), Dickenson Co. CD 4/9, under Bridges;

Va.—Blythe Bros. Co., Inc., 2911 Hutchinson Ave., Charlotte, N. C., LB $1,686,846 (7 bidders), 1.588 mi. 2 lanes 24 ft. x 7½ in. bit. c. conc. bit. top and 3 bridges beginning 0.042 mi. S. of SCL Petersburg, ending 1.624 mi. N. of SCL Petersburg (Conn. with Richmond-Petersburg Tpke), Rte. 95 (401), State Proj. 0095-074-010; 0095-123-070-072-074, Fed. Proj. I-1G-95-1 (6) 50, Prince George and City of Petersburg;

Va.—Heckler Bros., Inc., Highland Springs, Va. and Talbott-Marks Co., Inc., Box 308, Clarksville, Va., LB $3,097,009 (10 bidders), 1.821 mi. 2 lanes 24 ft. and 36 ft. x 9 in. c. conc. beginning 1.163 mi. E. of Rte. 350, ending Rte. 617 (Black Lick Rd.) Rte. 413, Contr. C-2, State Proj. 0413-029-002, C2, B60, B61, B62, B63, B64, B57, Fed. Proj. I-495-1 (4) 01, Fairfax Co.;

Va.—The Heward-Lauier Co., Box 1433, Richmond, Va., LB $102,539 (6 bidders), 2.072 mi. 22 ft. x 8 in. aggreg. base Type II, bit. surf. treat. beginning Int. Rte. 147 (Near Bon Air) ending 2.072 mi. E. Int. Rte. 147, Rte. 683, State Proj. 0683-020-028, Fed. Proj. S 456 (5), Chesterfield Co.;

Va.—L. S. Abernathy & Co., Rte. 4, Glen Allen, Va., LB $104,482 (7 bidders), 0.542 mi. 16 ft. x 6 in. aggreg. base Type II and bridge beginning 0.379 mi. S. Rte. 602 (S. Nottoway River) ending 0.203 mi. N. Rte. 602 (N. Little Nottoway River) Rte. 603, State Proj. 0603-067-019-020-021, Fed. Proj. S-1212 (2), Nottoway Co.;

Va.—W. H. Scott, Box 418, Franklin, Va., LB $110,475 (2 bidders) 0.601 mi. widen. exten. pavement variable x 7½ in. c. conc., bit. top beginning 0.601 mi. S. NCL Emporia, ending NCL Emporia, Rte. 301, State Proj. 0301-109-072, Fed. Proj. US-110-2 (1), Town of Emporia;

Va.—R. H. Rose, Jr., 2002 Beech Rd., Richmond, Va., LB $196,599 (7 bidders), 5.112 mi. grade, drain, beginning 1.768 mi. W. of Charlotte-Prince Edward Co. Line, ending 0.014 mi. W. of W. End future Vgn. R.R. overpass, Rte. 360, State Proj. 0360-019-002, G1; 0360-073-008, GL, Contr. No. 1, Fed. Proj. F-FG-036-1 (6), Contr. 1, Charlotte and Prince Edward Counties;

Va.—D. E. Worley Constr. Co., Rocky Mount, Va., LB $105,898 (6 bidders), 3.498 mi. 16 ft. 6 in. aggreg. base, Type I beginning 6.498 mi. W. Int. Rte. 21, ending 3 mi. W. Int. Rte. 21, Rte. 614, State Proj. 0614-010-008, Fed. Proj. S-1202 (1), Bland Co.;

Va.—Ralph E. Mills Co., Inc., Box 613, Salem, Va., LB $121,609 (6 bidders), 2.433 mi. 16 ft. x 6 in. aggreg. base Type I beginning 0.045 mi. S.W. Int. Rte. 606 (near Goodwins Ferry) Int. Rte. 730, E. of Eggleston, Rte. 625 and 682, State Proj. 0625-034-015-017, Fed. Proj. S-5G-1050 (1), Giles Co.;

Va.—Donald H. Selvage, Amherst, Va., LB $122,387 (2 bidders), 3.583 mi. 16 ft. x 6 in. aggreg. base Type I, bit. surf. treat. and 2 bridges beginning 0.149 mi. W. Int. Rte. 606 ending Int. Rte. 647, Rte. 679, State Proj. 0679-006-014, 015-016, Fed. Proj. S-1207 (1), Appomattox Co.;

Va.—rejected bids Apr. 9, 1.201 mi. 20 ft. x 8 in. aggreg. base Type I, bit. surf. treat beginning 1.201 mi. W. Int. Rte. 16 (near N. Tazewell) ending Int. Rte. 16 (near N. Tazewell) Rte. 631, State Proj. 0631-092-019, Fed. Proj. S-781(4), Tazewell Co.; 1.181 mi. 2 lanes 22 ft. x 5½ in. bit. c. conc. bit. top beginning 3.101 mi. N. Int. Rte. 413 ending 1.436 mi. S. Arlington Co. Line, Rte. 123, State Proj. 0123-029-012, C2, C3, Fed. Proj. F-089-1(7), Fairfax Co. CD 4/9.

WEST VIRGINIA—State Road Comm., Charleston, Zone 5, Oscar Vecellio, Inc., P. O. Box 28, Beckley, W. Va., CA $590,863, grading, draining 2 conc. pavement 0.481 mi. Clarksburg Expressway Rd. on Rte. U. S. 50, Contr. No. 2, Proj. U-282(8), Harrison Co. Bids Apr. 21, Awarded Apr. 29, CD 4/24, under LB.

▲ FLORIDA—State Hy. Dpt., Hillsborough Co. Courthouse, Tampa. Bids opened 4/28.

Fla.—Marion Constr. Co., Box 577, Ocala, Fla., LB $244,926 (7 bidders) Limerock base with c. con. surf. course 8.115 mi. SR S-21 Fed. Aid Proj. Nos. S-458 (3) and S-520 (1) Job Nos. 76620-3150 and 76620-3601, Putnam Co.; LB $275,526 (10 bidders) limerock stabilized base surf. tr., small drainage structures, etc. 9.125 mi. SR S-581 Fed. Aid Proj. No. S-500(1) Job No. 02520-3150, Citrus Co.; LB $211,184 (7 bidders) limerock base, asph. b. con. surf. course, etc. 4.63 mi. SR Nos. S-470 and S-475 Fed. Aid Proj. No. S-344 (3) Job No. 18591-3601 and State Job No. 18591-3602, Sumter Co.;

Fla.—J. D. Manly Constr. Co., Leesburg, Fla., LB $133,133 (4 bidders) limerock base, widening strips and b. conc. surf. course, etc. 11.363 mi. SR 31, Fed. Aid Proj. No. S-458 (4) Job No. 36190-3502, Marion Co.; LB $627,893 (3 bidders) 4-lane limerock base and overbuild b. conc. surf. course and binder course, etc. 4.896 mi. SR A-1-A Fed. Aid Access Project No. SR-AD 6(2) Job No. 70060-3502, Brevard Co.; LB $153,064 (8 bidders) limerock base, b. conc. surf. course, etc. 3.591 mi. SR S-475 Fed. Aid Proj. No. S-21 (3) Job No. 18592-3601, Sumter Co.;

Fla.—Pope Hauling Co., Inc., Quincy, Fla., LB $124,776 (4 bidders) grading, stabilized base surf. tr., etc. 2.627 mi., SR S-375 A, SR 385, Job No. 49510-3602 SR S-65-C SR S-65, to SR 30, Job No. 49590-3601 SR S-379, Job No. 49590-3602, SR S-379-A Job No. 49592-3601 SR S-67-A, State Proj. Job No. 49520-3601, Franklin Co.; LB $186,582 (4 bidders) stabilized base surf. tr. etc. 3.66 mi. SR S-367-A Fed. Aid Proj. No. S-140 (2) Job No. 59520-3150, Wakulla Co.;

Fla.—Georgia-Florida Paving, Inc., Chiefland, Fla., LB $178,924 (5 bidders) b. conc. leveling course, b. conc. surf. course, etc., 14.994 mi. SR 200, State Proj. Job No. 74040-3501, Nassau Co.;

Fla.—Hubbard Constr. Co., Box 7217, Orlando, Fla., LB $121,688 (3 bidders) limerock base, b. conc. surf. course with binder course, storm sewers, etc. 0.928 mi., SR 438 Fed. Aid Proj. No. S-396 (2) Job No. 75250-3501, Orange Co.;

Fla.—J. W. Conner & Cons., Inc., Box 2522, Tampa, Fla., LB $323,976 (8 bidders) limerock base surf. tr., 2 concrete box culverts of bridge length, etc. 8.963 mi. SR S-587 (Moon Lake Road) Fed. Aid Proj. Nos. S-475 (1) and S-475 (2) Jobs Nos. 14620-3250 and 14620-3151, Pasco Co.;

Fla.—Cone Bros. Constr. Co., Box 1259, Tampa, Fla., LB $2,544,224 (5 bidders) 4-lane divided, 9 in. plain c. conc. pavement, 6½ in. limerock base, surf. tr. 8½ in. limerock base b. conc. surf. course with binder course, 1 concrete box culvert of bridge length, 4 grade separation bridges concrete slab on prestressed beams with concrete piers founded on prestressed concrete piles, 2.193 mi. SR 400 FAI Proj. No. I-4-1 (23) 22, Job No. 10190-3413 Hillsborough Co.;

Fla.—White Constr. Co., Inc., Box 73, Chiefland, Fla., LB $1,454,690 (6 bidders) 4-lane limerock base, b. conc. surf. course and binder course limerock base shoulders, surf. tr., 1 concrete box culvert, bridge length, dual bridge over South Prong of Little St. Mary's River (308 ft.) and over SR 125 (137 ft.) and 204 ft. single bridge on graded road 4.476 mi. SR 8, FAI Proj. No. 1-10-5 (15) 325 Job No. 27090-3403, Baker Co.;

Fla.—Capeletti Bros., Inc., Box 1147, Hialeah, Fla., LB $407,451 (6 bidders) limerock base, surf. tr., 2 bridges 80 ft. and 120 ft. concrete slab deck on prestressed concrete pipe bents, 2 concrete box culverts drainage structures, 6.912 mi. SR 80, State Proj. Job No. 0701-3501, Hendry Co.;

Fla.—L. C. Morris, Inc., 2581 NW 72 St., Miami, 47, Fla., LB $1,481,643 (12 bidders) limerock base, b. con. surf. course and binder course, 79 ft. 5 in. concrete slab deck bridge on prestressed concrete pile, 8.485 mi. SR 27, Fed. Aid Proj. No. S-495(1) Job No. 87070-3101, Dade Co. CD 4/16.

▲ FLORIDA—State Rd. Dpt., Hillsborough Co. Courthouse, Tampa. Bids opened 4/28.

Fla.—Marion Constr. Co., Box 577, Ocala, Fla., LB $412,307 (6 bidders), grading, limerock base, b. conc. surf. course, drainage structures, one 140 ft. bridge of prestressed concrete deck slab units, concrete pile bents, etc. 11.208 mi., SR S-475, Fed. Aid Proj. No. FJ 10-A, Job No. 11611-3601, and State Job No. 11610-3602, Lake Co.;

Fla.—White Contr. Co., Inc., Box 73, Chiefland, Fla., LB $638,318 (6 bidders), grading, limerock base, b. conc. surf. course and binder course, 2 concrete box culverts etc., 10.898 mi. SR 23 (US 441), Fed. Aid Proj. No. F-002-3 (13) Job No. 29030-3501, Columbia Co. CD 4/16.

W. L. Cobb Constr. Co., P.O. Box 977, Tampa, Fla., CA $679,251, Section 2, street improv., ST. PETERSBURG BEACH, FLA. City, City Hall, St. Petersburg Beach, Fla. Bids Apr. 20, CD 4/28, under LB.

▲ Flaco Corp., Laidlaw Contr. Co., Wolf Edge Rd., Mobile, Ala., and Farmer Constr. Co., 2152 Halls Mill Rd., Mobile, Ala., CA $1,437,398, 4 mi. Wraag Swamp Drainage Canal from swamp southward to Dog River, MOBILE, ALA. City, City Hall, Mobile, Ala. Bids Apr. 22, awarded Apr. 28, CD 4/28, under LB.

▲† Standard Dredging Corp., 200 E. 42nd St., New York 17, N. Y., CA $1,064,497, dredging 18 ft. x 140 ft. channel for Mississippi River-Gulf Outlet, GIWW to Bayou Dupre, Orleans and St. Bernard Parishes, Inv. 49-43, LOUISIANA U. S. Eng., foot of Prytania St., New Orleans, La. Bids Mar. 5, awarded Apr. 29, CD 3/10, under LB.

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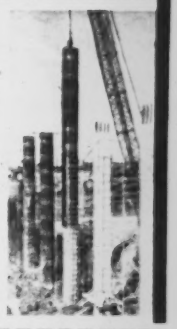

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NOW AVAILABLE in a choice of two motors

1750 R.P.M. and Low Speed 1140 R.P.M. for longer life, less wear and improved non-clog characteristics.

NOW AVAILABLE with a choice of two controls

Conventional float switch

MICRO Pressure switch (as illustrated)

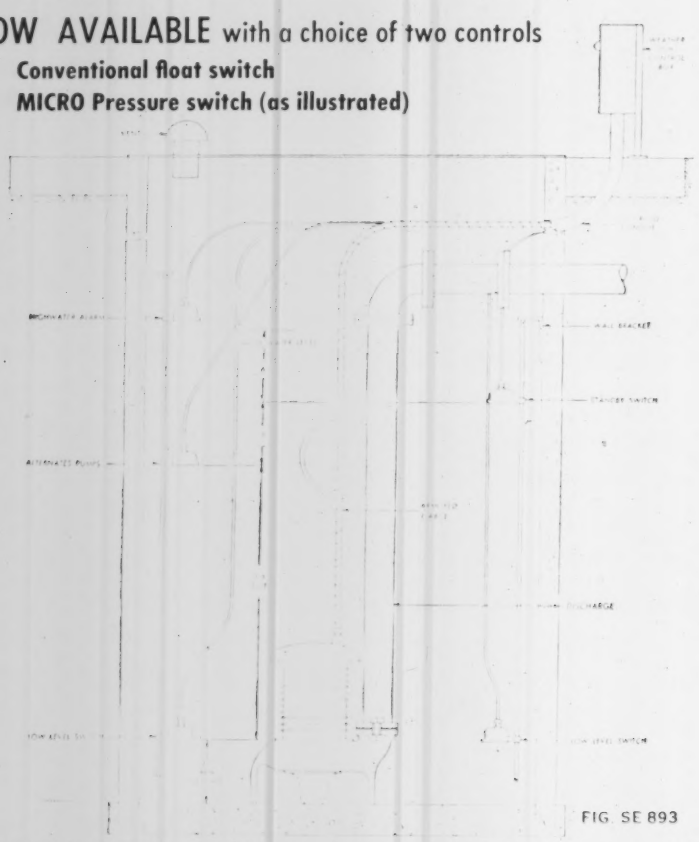

FIG. SE 893

Illustrated is a Duplex Installation of two **weil** Submersible Sewage Pumps employing MICRO Switch controls to start and stop pumps; to alternate pumps; and to provide for high water alarm. Note the ease with which switches are positioned (or changed) to control water levels. The Submersible MICRO Switch has no exposed moving parts, needs no servicing and coupled with the **weil** Submersible Pump provides an extremely efficient non-clog trouble-free pumping system.

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Roland Constr. Co., Box 850, Alexandria, La., LB $655,030 (7 bidders), repairing main gravity outfall sewer, MONROE, LA. City, City Hall, Monroe, La. CD 7-21.

McDonough Constr. Co., Box 7476, New Orleans, La., CA $589,384, grain storage addn., NEW ORLEANS, LA. Bd. Comm., Port of New Orleans, 2 Canal St., New Orleans, La. Bids Apr. 15, awarded Apr. 24. CD 4-22 under LB.

TENNESSEE—State Hy. Dpt., Nashville.

T. E. Gillespie, 520 Park Ave., P.O. Box 104, Lebanon, Tenn., CA $532,741, 6 bridges, approaches, from Thompson Lane to Rutherford Co. line, Interstate Proj. I-24-1 (4) 6, Davidson Co., Bids Apr. 17, awarded Apr. 24. CD 4-22 under LB.

▲ TENNESSEE—State Hy. Dpt., Nashville.

Tenn.—Tillett Bros. Constr. Co., Rte. 5, Shelbyville, Tenn., CA $701,859, grading, drainage, contr. 5 bridges on 3.5 mi. from Betsy Wills Creek to foot of Monteagle Mt., Tullahoma-Tracy City, I-24-2 (8) 76, Coffee and Grundy Counties. CA $822,847, grading, drainage, constr. 7 bridges between the Oak Ridge turnpike and State Rte. 94, Kingston, I-40-7 (23) 358, Roane and Loudon Counties.

Tenn.—Andersen-Gregory Co., 614 Sudekum Bldg., Nashville, Tenn., CA $1,648,385, grading, drainage, const. 7 bridges, 6.2 mi., between Silver Point and Maxae Branch, Cookeville, I-40-6 (9) 274, Putnam Co.

Tenn.—Knoxville Constr. Co., P.O. Box 1847, Neyland Dr., Knoxville, Tenn., CA $1,589,898, bit. mat. and concrete paving, 4.7 mi. beginning at Clinch River west of Kingston and extending to the Oak Ridge Turnpike, Kingston, Roane Co.;

Tenn.—Oman Constr. Co., Acklen Park, Nashville, Tenn., CA $2,272,345, grading, drainage, constr. 4 bridges, 4 mi. from Luyben Hills Road to Davidson Co. line, Ashland City, Cheatham Co. Grand total $7,035,334. Bids Apr. 17, awarded Apr. 24. CD 4-22 under LB.

BUILDINGS—LB & CA

▲† J. L. Coble Constr. Co., 1705 Battleground Ave., Greensboro, N. C., CA $4,454,500, 285 unit, Capehart Family HOUSING, on-site improvs. and utilities, ENG-43-110-59-18, FORT LEE, VA. (U. S. Engr., foot of Front St., Norfolk, Va. Bids Apr. 27. CD 4-1 under LB.

Clemson College Bd. Trustees, Clemson, S. C., rejected bids Feb. 6, STUDENT DORMITORY addn., CLEMSON, S. C., LB $710,000. CD 2-19 under LB.

▲ Daniel Constr. Co. of Alabama, P. O. Box 1633, Birmingham, Ala., CA $4,196,000, First National BANK, ATLANTA, GA. First National Bank, Marietta and Peachtree Sts., Atlanta, Ga. Bids Feb. 6. CD 2-19 under LB.

J. C. Stockton & Son, 1416 Wilson St., Augusta, Ga., LB $411,900, PHYSICAL EDUCATIONAL BLDG., Academy of Richmond Co., 1 Baker Ave., AUGUSTA, GA. Richmond Co. Bd. Educ., 2083 Heckle, Augusta, Ga. Bids Apr. 23.

▲ Meadow Corp., 88 S. Boulevard, Montgomery, Ala., Own Forces, $3,000,000, 400 RESIDENCES, Avondale Subdivision, PENSACOLA, FLA.

Daniel Constr. Co. of Alabama, Inc., 822 7 Ave. S., Birmingham, Ala., CA $400,000, 2 story WMU BLDG. addn., BIRMINGHAM, ALA. Woman's Missionary Union, Southern Baptist Convention, 1 Ave. and 20 St., Birmingham, Ala. Warren, Knight & Davis, Protective Life Bldg., Birmingham, Ala., archts. Awarded Apr. 24.

▲ Meadow Corp., 88 S. Boulevard, Montgomery, Ala., Own Forces, (Apr.) $2,000,000, Crestview RESIDENTIAL SUBDIVISION, HUNTSVILLE, ALA.

Merritt & Raines Constr. Co., 2604 Halls Mill Rd., Mobile, Ala., Owner Builds, $750,000, third addn., Maple Heights RESIDENTIAL SUBDIVISION, MOBILE, ALA.

Ross E. Cox, P.O. 2780, Baton Rouge, La., LB $643,250 (14 bidders), 2 story precast concrete panel, brick and concrete block FEED AND FERTILIZER BLDG., LSU campus, BATON ROUGE, LA. Louisiana State University, Baton Rouge, La. Bernard & Bernard, 1701 Pere Marquette Bldg., New Orleans, La., archts.

Quinn Constr. Co., Box 4294, New Orleans, La., CA $740,385, 2 story panel, ANU brick, concrete block, HIGH SCHOOL, NEW ORLEANS, LA. Holy Name of Jesus Mercy Roman Catholic Church, 6161 St. Charles, New Orleans, La. Jules K. De Verginie, Pere Marquette Bldg., New Orleans, La., archt. Awarded Apr. 27. CD 4-10.

▲ S & W Constr. Co., P. O. Box 4207, 2630 Mallory St., Memphis, Tenn., CA $682,476, Richland JUNIOR HIGH SCHOOL, near Richland and Ave., MEMPHIS, TENN. City Bd. Educ., Memphis, Tenn. Awarded Apr. 24. Mann & Harrison, 34 N. Cleveland St., Memphis, Tenn., archts.

McNeese Constr. Co., 690 Scott St., Memphis, Tenn., CA $439,590, Shannon ELEMENTARY SCHOOL, McNeese, Shannon Ave., near Hyde Park, Memphis, Tenn. J. Martin & Adams, 3355 Poplar Ave., Memphis, Tenn., archts.

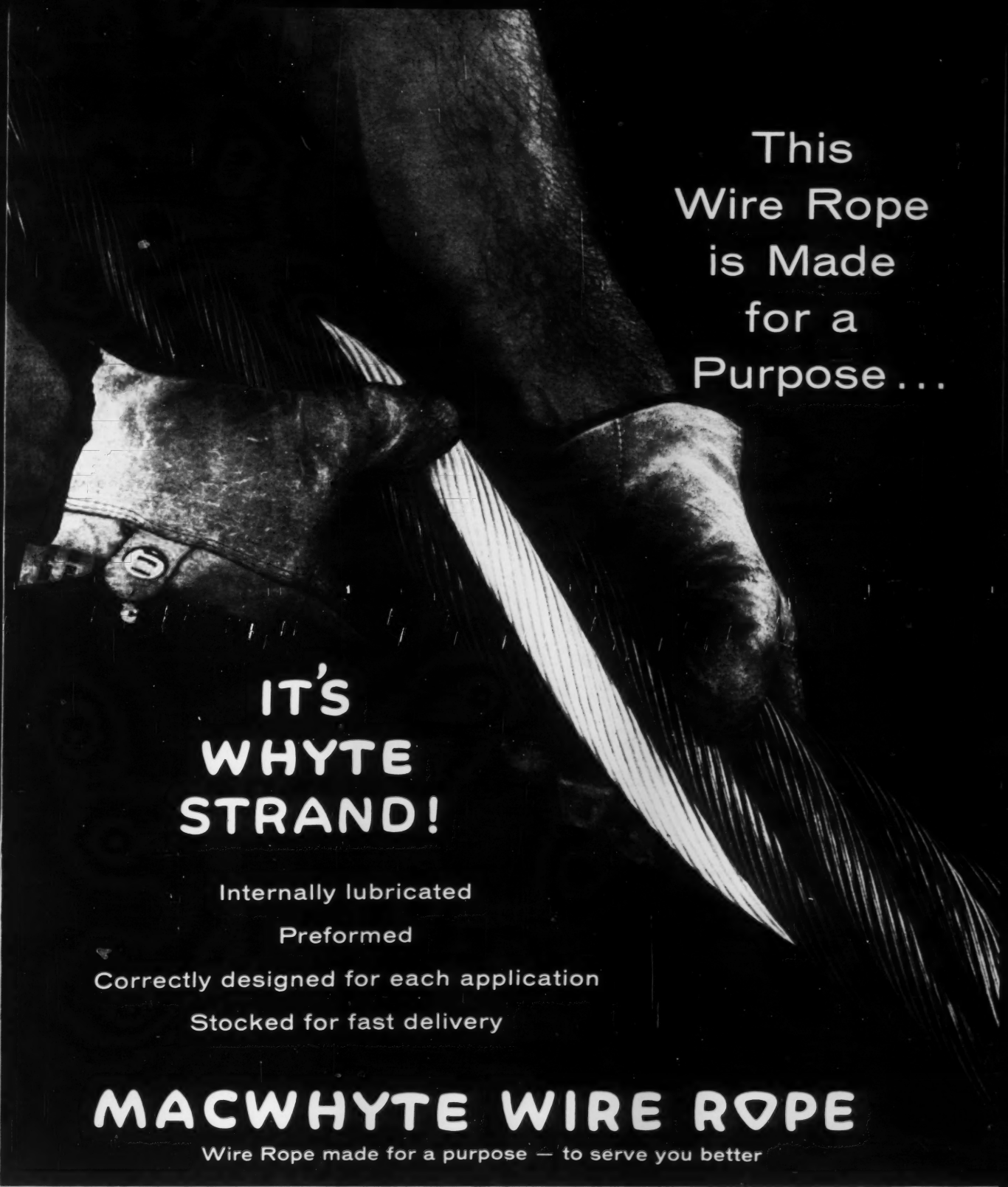
MIDDLE WEST

BUILDINGS—BA

Wis., Cassville—SCHOOL, BA 5-21, Joint School Dist. No. 1, Junior and Senior High School, $980,000. Plans, deposit $40. Cloud, Dietz & Anderson, Empire Bldg., Rockford, Ill., archts. CD 8-28.

▲ O., Cleveland Heights—NURSING HOME, BA 5-28, Benjamin Rose Institute, Rose Bldg., Cedar and E. 105 Sts., selected bit. asphalt paving, home, $2,000,000. Garfield, Harry S. Shafer, Fyan & Williams, 1240 E. 12th St., Cleveland 2, Ohio, archts. CD 12-21-59.

(Continued on page 157)



For shovel hoist rope, dragline, clamshell crane rope, boom hoist line, dozer rope, scraper rope, contractor's hoist and derrick rope, and winch line.

157

MACWHYTE WIRE ROPE COMPANY • 2900 Fourteenth Avenue • Kenosha, Wisconsin

Manufacturers of a thousand and one different wire ropes, slings, and cable assemblies
Distributed and stocked throughout the United States

Looking for a modern 2½ yd. shovel?

CHECK THESE MODERN FEATURES

- ✔ Disc type clutches
- ✔ Forced air cooling
- ✔ Multi-Stage Torque Converter
- ✔ Exclusive Powerflo slide pinion
- ✔ Simplicity of design . . . only 14 gears and pinions
- ✔ Simple jack adjustment of crawler treads
- ✔ Dependable air or manual controls
- ✔ Self-removing counterweight
- ✔ Convertible to crane, dragline and trench hoe

SEE THE *NEW* MANITOWOC MODEL 3100

1st IN PERFORMANCE

1st IN OUTPUT

Here is a new Manitowoc shovel in the 2½ yd. range that will outproduce and outperform anything in its class. Completely modern in design, the Model 3100 provides many exclusive, advanced features that contribute to more yardage per shift at lower net cost per yard.

Though it's a big machine, with all the big machine design and construction features, the Model 3100 handles, travels and can be moved from job to job with small machine ease. It's easy to make fast, short moves by truck because a minimum number of rugged, precisely machined fittings allow you to remove the counterweight, *complete* crawler assemblies and other components without time consuming advance preparation and effort . . . *and* the 3100's overall maximum outside width of only 11'1" (within ordinary RR shipping clearances) means you can run it aboard a standard flat car, as is, and you're ready to go!

The Manitowoc 3100 is a big producer and big earner on any job—shovel, crane, back hoe, clam or dragline. Ask your Manitowoc distributor for additional details and specifications on the new Manitowoc Model 3100 . . . a really modern 2½ yard excavator.

Manitowoc

MANITOWOC ENGINEERING CORP.

(A subsidiary of The Manitowoc Company, Inc.)

MANITOWOC, WISCONSIN

CRANES	SHOVELS	DRAGLINES	TRENCH HOES
25 TON - 100 TON	1¼-YD. - 5½-YD.	1¼-YD. - 6-YD.	1¼-YD. - 3-YD.

(Continued from page 154)

Wis., Madison—ENZYME LABORATORY—BA 5/28—University of Wisconsin, Madison, Enzyme Laboratory addn. $565,000. Plans deposit $25. Siberz, Purcell & Cuthbert, 1920 Monroe St., archts. CD 4/3.

▲† Ill., Granite City—HOUSING—BA 5/29—U. S. Eng., 475 Merchandise Mart, Chicago, Zone 54, 65-family Capehart housing. U. S. Engineer Depot, $1,072,500. CD 4/30.

▲ Wis., Madison—OFFICE—BA 6/3—Cuna Mutual Insurance Society, 1617 Sherman Ave., office, $1,000,000. Plans deposit $50. Extended date. Kaeser & McLeod, 3407 Circle Close Dr., archts. CD 4/14.

▲ O., Holmesville—PLANT—BA 6/9—Addressograph-Multigraph Corp., 1200 Babbitt Rd., Cleveland, Zone 32 (selected 1st bidders), plant to process chemicals, $1,500,000. Dalton & Dalton, The Arcade, Cleveland, Zone 14, archts. CD 4/15.

HEAVY CONSTRUCTION—LB & CA

E. A. Taylor & Son, New Lexington, O., LB $438,850 (12 bidders). Contr., Ill. sanitary sewers for sewage disposal sys., MINGO JUNCTION, O. Village, P. O. Box 98, Mingo Junction, O. Bids Apr. 24. CD 4/8.

▲ John Doherty Co., 7229 S. State St., Chicago, Ill., CA $1,222,450, main drain So. Rte. Expressway, Cottage Grove Ave. and 93 St. No. 066-1316-15D BI-09-1 (35), CHICAGO, ILL. Comrs. Cook Co., County Bldg., Chicago, Ill. Bids Mar. 31. CD 4/6, under LB.

Fruin-Colnon Contg. Co., 1706 Olive St., St. Louis 3, Mo., CA $690,920 storm water pumping station, incl. storm sewer connections for drainage of East St. Louis Expressway, EAST ST. LOUIS, ILL. Illinois Division Highway, Springfield, Ill. Bids Apr. 24. CD 4/29, under LB.

WISCONSIN—State Hy. Comm., State Office Bldg., Madison.

H. Turner & Son, Boscobel, Wis., CA $737,102, grade and subbase 5.871 mi. Lake Delton-Madison Road (C.T.H. CS, South County Line) and Lodi-Arlington Road, IHs 90 and 94, and S.T.H. 60, Contr. 1, Projs. I-IN 90-2(5)117 and S. 0227(3), Columbia Co. Bids Apr. 14. CD 4/17, under LB.

▲† Roth, Wadkins & Wise, Inc., 1044 Plymouth, Detroit, Mich., CA $1,277,660, ordnance storage facilities and related work, K. I. Sawyer Air Force Base, Kinross Air Force Base, Wurtsmith Air Force Base, ENG-20-064-59-66, MICHIGAN. U. S. Eng., 1101 Washington Blvd., Detroit 31, Mich. Bids Apr. 23. CD 4/23.

▲† Mille-Davis Co., 1029 Portage, Kalamazoo, Mich., CA $1,284,202, Air National Guard facilities, Kellogg Field, ENG-20-064-9-63, BATTLE CREEK, MICH. U. S. Eng., 1101 Washington Blvd., Detroit 31, Mich. Bids Apr. 15. CD 4/7.

BUILDINGS—LB & CA

Hoelzl-Martini Constr., 13515 Brookpark Rd., Cleveland 11, O., LB $583,400, (11 bidders), general contract, imprvt. BLOSSOM HILL SCHOOL for GIRLS, Brecksville, CLEVELAND, O. Comrs. Cuyahoga Co., Rm. 51, County Administration Bldg., Cleveland 14, O. Bids Apr. 23. CD 4/1.

▲ Todd Tibbals, 965 E. Broad St., Columbus, O., Owner Builds, Over $1,000,000, ten 1 story, brick studio APARTMENTS, Lincoln Village Subdivision, COLUMBUS, O.

Duffy Constr. Co., Marshall Bldg., Cleveland 13, O., CA $650,000, (7 bidders), 90-bed HOSPITAL addn., GARFIELD HEIGHTS, O. Marymount Hospital, 12300 McCracken Rd., Cleveland 25, O. Bids Apr. 28. CD 4/9.

▲ Albert M. Higley Co., 2036 E. 22 St., Cleveland, O., CA $2,100,000, two women's DORMITORIES, GRANVILLE, O. Denison University, Granville, O. CD 12/24.

▲ Brown Constr. Co., 3334 Prospect Ave., Cleveland 15, O., CA Est. $3,000,000 (10 bidders), 1st unit University-type RESEARCH CENTER, Concord Twp., PAINESVILLE, O. Diamond Alkali Co., Union Commerce Bldg., Cleveland 14, O. Giffels & Rossetti, Marquette Bldg., Detroit, Mich., archts. CD 9/23.

▲ William Kalker, 122 Court St., White Plains, N. Y., CA $5,000,000, 15 story, 310,000 sq. ft. prec. panel OFFICE BLDG., Clinton and Jackson Blvd., CHICAGO, ILL. Clinton-Jackson Corp., 122 Court St., White Plains, N. Y. Awarded Apr. 1. CD 1/21.

▲ Mayfair Constr. Co., 5660 N. Kedzie Ave., Chicago, Ill., CA $1,913,500, general contract, 4 story, L-shaped Festus outpatient addn., County HOSPITAL, CHICAGO, ILL. Comrs. Cook Co., County Bldg., Chicago, Ill. Bids Mar. 31. Awarded Apr. 27. CD 4/2, under LB.

▲ Morris Agency, 101 W. Main St., Collinsville, Ill., Separate Contracts, $550,000, 35 RESIDENCES, Morris Heights subdivision adjacent to Belt Line No. 40 in northern part of city. Separate Contracts, $600,000, 30 de luxe-type RESIDENCES, Anderson Acres Subdivision adjacent to 1300 W. Main St., COLLINSVILLE, ILL.

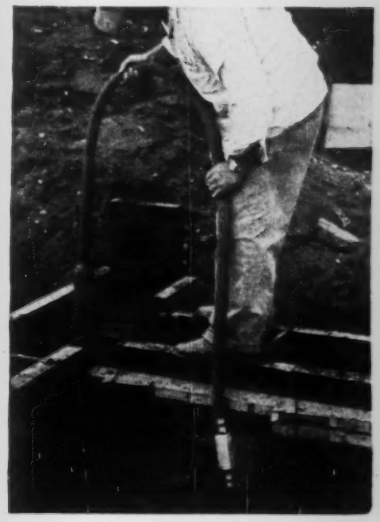
▲ J. H. Findorff & Son, 601 W. Wilson St., Madison, Wis., LB Est. $1,000,000 general contract, WOMEN'S DORMITORY, MADISON, WIS. R. Levine, c/o Villa Maria, 615 Howard St., Madison, Wis. Bids Apr. 22. CD 4/14.

Long Island Homes, 3801 W. Good Hope Rd., Milwaukee, Wis., CA Est. $551,000, 8 APARTMENTS, MILWAUKEE, WIS. American Federation of State, County & Municipal Employees, 1012 N. 3 St., Milwaukee, Wis. CD 10/15.

(Continued on page 160)

STOW MOTOR-IN-HEAD VIBRATOR . . . saves time, cuts costs

easily carried, operated by one man



A Complete Line of Concrete Construction Equipment.

Vibrating Screeds

Grinders

Roto-Trowels

Vibrators

BINGHAMTON, N. Y. The versatile, lightweight, 60 cycle motor-in-head vibrator introduced last year by Stow Manufacturing Co. has proved to be one of the most popular in the line. Contractors like the way the STOW YU vibrates even the stiffest mixes; and they appreciate the way it saves money, down-time and labor costs . . . thanks to its one-man operation and its freedom from maintenance or fuel problems.

The heart of this vibrator is its Universal motor, completely sealed in the head which delivers 12,000 to 15,000 VPM. This high-frequency, low amplitude vibration penetrates farther, reduces voids with much less wear and tear on the forms. To change the head, simply snap it off, snap on a replacement.

Sturdy 4-ply neoprene encases the electric wires and serves as a handle. It is stiff enough to control the vibrating head, flexible enough to coil easily for carrying and storage.

The completely enclosed, water-tight on-off switch is conveniently located 7 feet from the head; a 25' electric cable plugs into any AC or DC outlet. The STOW YU is equipped with a thermostatic switch which shuts off the motor automatically in case of overheating or overload, re-starts it when safe.

Standard equipment on the STOW YU vibrator consists of a 2⅝" vibrator head with a built-in Universal motor, rugged 4-ply neoprene casing, waterproof on-off switch, and a 25' electric cable. Casing is available in 7', 14', and 21' lengths for vibrators that weigh 25 lbs., 33 lbs., and 41 lbs. respectively.

For more information on this equipment, write for Stow Catalog 580 which gives complete data on STOW Vibrating Screeds, Vibrators, Roto-Trowels and Concrete Grinders.

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Manufacturing Co.
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Please send me Stow Catalog 580 and name of nearest distributor.

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They said it couldn't be done!

FIVE YEARS AGO Euclid started an intensified program of product improvement and development that was far beyond anything that had ever been done in the construction equipment industry. Always a leader in years-ahead engineering that made "Eucs" outstanding performers on the toughest jobs, Euclid anticipated your need for still larger, more efficient equipment to help beat the squeeze on profits.

Without tricky project names or slogans, the development program moved full speed ahead. New machines were put through exhaustive tests at Milford Proving Grounds and the General Motors Tech Center with its unsurpassed testing and research facilities. Then followed actual job operations on a wide range of work . . . under close check by Euclid product engineers so that further improvements in productive capacity and service life could be made. One by one, new machines were added to the Euclid line as their efficiency, design and reliability were established.

5 YEAR DEVELOPMENT

. . . most extensive ever undertaken

Now Euclid offers the most complete line of modern, large capacity job-proved earthmovers in the industry. Here's what has been accomplished in the past five years to provide equipment that enables you to bid more profitably:

5 new scraper models with capacities from 7 to 24 yds. struck . . . other models increased in power and capacity

4 new rear-dump haulers—12 to 35 ton capacities—with major improvements in performance of other models

2 new crawlers with a completely new design concept that provides unmatched work-ability . . . TC-12 with Twin-Power is the world's most powerful crawler

No matter how small or how big the job, there's a Euclid model that will move yardage more profitably. Before you replace or add to your equipment fleet, get all the facts from your Euclid dealer. He can show you how Euclid's development program can mean lower earthmoving costs and a better return on your investment. EUCLID Division of General Motors, Cleveland 17, Ohio

GM GENERAL MOTORS EUCLID

EUCLID EQUIPMENT

FOR MOVING EARTH, ROCK, COAL AND ORE

◀ **S-7** 9 yds. heaped

S-12 17 yds. heaped

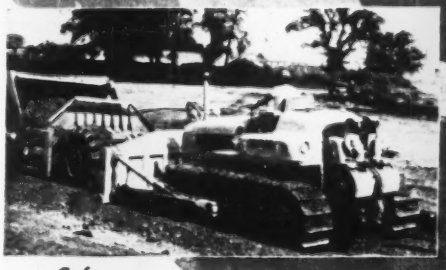
TC-12
▼ 402 net h.p.

S-18
30 yds. heaped

PROGRAM...

EUCLID

TS-24
32 yds. heaped



C-6
202 net h.p.

SS-24 32 yds. heaped

R-27 27 tons

◀ **S-12 RD**
22 tons

2 other models of 12 and 35 ton capacities

11 completely new JOB-PROVED earthmovers

Kinnear Rolling Doors

Kinnear *originated* the upward-acting door with the curtain of interlocking steel slats. For more than half a century, Kinnear has built doors *exclusively*—your assurance of highest quality. Write for Kinnear catalog!

The KINNEAR Manufacturing Co.
1820-40 Fields Ave., Columbus 16, Ohio
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KINNEAR ROLLING DOORS
Saving Ways in Doorways

For **CIVIL ENGINEERS**

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IT'S HANDY...
weighs only 9 oz.; 2¾" x 3" x 1⅛"; easy to carry in pocket, on belt, in car.

IT'S VERSATILE...
ideal for preliminary and supplementary surveying; used as a compass, transit, level, plumb, alidade, clinometer. Shows direction to 1°, level, slope or grade within 1°.

IT'S MADE TO LAST A LIFETIME
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WM. AINSWORTH & SONS, INC.
2151 LAWRENCE ST. • DENVER 5, COLORADO

(Continued from page 157)

T. S. Willis, 20 E. Milwaukee St., Janesville, Wis. LB $567,882, (13 bidders), general contract. TRAINING SCHOOL, WHITEWATER, WIS. Wisconsin State Colleges Bldg. Corp., Madison, Wis. Bids Apr. 23. CD 3-24.

WEST OF MISSISSIPPI

HEAVY CONSTRUCTION—BA

† Tex., Daingerfield—FUEL SYSTEM, etc.—BA 5/26—Officer in Charge of Constr., Eighth Naval Dist., Bldg. 16, U. S. Naval Station, New Orleans (Algiers), La. high energy fuel systems and Ordnance Aerophysics Laboratory modifications; NBy-15705, Spec. 15707-57. $500,000-$1,000,000. CD 9-23-57, under Public Buildings.

▲ Mo., St. Louis—BA 6/2, City Bd. P. Service, 304 City Hall, Zone 3, installing 18 mi. 78 in. high-pressure steel water mains from Chain of Rocks Waterworks Plant to Bissell's Point and Baden Pumping Stations, $4,650,000. CD 4-25-57.

▲† Mo., St. Louis—TUNNEL, etc.—BA 6/8—National Park Service, Dept. Interior, Jefferson National Expansion Memorial, 415 Market St., Zone 2, relocation of railroad tracks in 960 ft. tunnel and open-cut; removal existing elevated railroad structure past Jefferson National Expansion Memorial on riverfront between Washington Ave. and Poplar St. $2,940,000. Ford, Sartined & Assocs., West Long Lake Rd., Bloomfield Hills, Mich., archts. CD 4-27.

BUILDINGS—BA

Iowa, Cedar Rapids—CONVALESCENT HOME—BA 5/13—Margaret E. Howard Hall Radiation Center, c/o Brown & Healey, archts., Town & Country Bldg., 1st Ave. and 1st St. S. E.; 2 story, fireproof Hall Convalescent Home, $500,000.

▲ Colo., Lakewood—SCHOOL—BA 5/26—School Dist. R-1, Jefferson County, 1580 Yarrow, 1 and 2 story, 130,000 sq. ft. Alameda Senior High School, Alameda, $2,225,000. Wheeler & Lewis, 2215 W. 32 St., Denver, archts.; ketchum, Konkel & Hastings, 730 Klamath St., Denver, structural engrs. CD 7-2.

▲ Mo., Clayton (St. Louis 5 P. O.)—HOSPITAL—BA 6/2, St. Louis County Bd. P. Wks., Court House, Zone 5, 4 story, bsmnt. H-shaped, brick, rein.-con., steel, etc. mental and chronic patients annex to St. Louis County Hospital, 601 S. Brentwood Blvd. $2,500,000. Leo A. Daly Co., 3207 Olive St., St. Louis, Zone 8, archt.-engr. CD 7-19-57.

▲† Okla., Oklahoma City—COURT HOUSE, etc.—BA 6/9—General Services Admin., P. Bldgs. Service, 1114 Commerce St., Dallas 2, Tex.; U. S. Court House and Federal Office Bldg., Proj. 34901. Plans deposit $100. CD 2-14-58.

BUILDINGS—SLC

N. M., Taos—HOSPITAL—Holy Family of Nazareth, Des Plaines, Ill., soon lets contract 19,000 sq. ft., air-conditioned hospital, $475,000. Kruger, Lake & Henderson, 142 Monroe NE, Albuquerque, archts.

▲ Tex., Dallas—HOSPITAL—Stevens Park Osteopathic Hospital, Joe Earl Smith, archt.-engr., Suite 107, 2900 Maple Ave., soon lets contract 2½ story, 48,000 sq. ft., 100-bed hospital, $1,000,000. Gregerson & Gaynor, 3010 Blackburn St., engrs. CD 7-14.

Tex., San Angelo—HOSPITAL—St. John's Hospital, c/o Sisters of Charity of the Incarnate Word, soon lets contract 3 story hospital addn., $500,000. Don R. Goss, 103 S. Jefferson St., archt. CD 10-31-57.

HEAVY CONSTRUCTION—LB & CA

▲ MISSOURI—State Hy. Dpt., Jefferson City. Bids opened 4-24.

Mo.—Clarkson Constr. Co., 4133 Gardner Ave., Kansas City 20, Mo. and Union Constr. Co., 1401 Fairfax Trafficway, Kansas City, Kan., LB $177,341 (8 bidders), graded earth, culverts, 1.24 ft. concrete pavement, 1.035 mi., Jackson Co.; LB $1,037,804 (8 bidders), graded earth, culverts, 2.24 ft. concrete pavement, separated by 4" median 2.964 mi., Johnson Co.

Mo., R. B. Potashnick, P. O. Box 423, Cape Girardeau, Mo., LB $1,233,211 (4 bidders), graded earth, culverts, 2.24 ft. concrete pavement 6.139 mi., Mississippi Co.

Mo., Cameron, Joyce & Co., 19 South 7th St., Keokuk, Iowa, LB $1,377,016 (8 bidders), graded earth, culverts, 24 ft. wide concrete pavement 10.575 mi., Pemiscot Co.

Mo., W. J. Menefee Constr. Co., 2500 W. 16th St., P. O. Box 40, Sedalia, Mo., LB $909,618 (7 bidders), graded earth, culverts, 24 ft. concrete pavement 6.718 mi., Howard Co.

Mo., Porter-DeWitt Constr. Co., Inc., P. O. Box 279, Poplar Bluff, Mo., LB $838,414 (4 bidders), graded earth, culverts, concrete pavements, widen, resurf. 3.94 mi., Franklin Co. CD 4-6.

▲ Frum-Colnon Contg. Co., 1726 Olive St., St. Louis 3, Mo., LB $1,139,894, est. $1,300,000, impr. 11 Lambert-St. Louis Municipal Airport, incl. 1,600 ft. extension to 6,000 ft. northeast-southwest runway, etc., St. LOUIS, MO., City Bd. P. Service, 304 City Hall, St. Louis 3, Mo. Bids Apr. 28. CD 3-10.

+ U. S. Eng., 1709 Jackson St., Omaha 2, Neb., cancelled bids to have been opened Apr. 28, erection of construction bridge over Missouri River near Fort Thompson, Big Bend Reservoir, Proj. 575-57-59-71, SOUTH DAKOTA. Est. $300,000-$500,000. CD 4-15.

▲ KANSAS—State Hy. Comn., Wichita.
Standard Constr. Co., Inc., 519 South Broadway, Wichita 2, Kan., CA $553,997, concrete paving 1.965 mi., SP 35W-40 I 35W-1(13) 72 Pts. I&II; CA $531,471, concrete paving 2.286 mi., SP 35W-40 I 35W-1(13) 74, both in Harvey Co. Bids Apr. 16. CD 4-22, under LB.

TEXAS—State Hy. Comn., Austin.
Gilvin-Terrill, Inc., Box 2268, Amarillo, Tex., CA $604,417, hot mix b. conc. and illumination sys., 1.021 mi. Hy. U. S. 60, etc., Proj. U. S. 162 (10), Potter Co. Bids Apr. 18. CD 4-23, under LB.

TEXAS—State Hy. Comn., Austin.
John T. Leslie, Bailey, Tex., CA $602,282, flex. base, 2 course surf. treat., 9.568 mi. Hy. St. 114 & 24, Proj. S. 623 (1), etc., Wise Co. Bids Apr. 17. CD 4-21, under LB.

▲† Peter Kiewit Sons Co., 4106 Colorado Place, Oklahoma City 12, Okla., CA $1,234,632, runway overrun and replacement, alert taxiway, operations aprons, and Colorado City Aux. Runway overruns, Webb Air Force Base, ENG-41-443-59-33, BIG SPRING, TEX. U. S. Eng., 100 W. Vickery, Fort Worth, Tex. Bids Apr. 22. CD 4-27, under LB.

S. R. O. Asphalt Co., Arlington, Tex., LB $499,935, est. $550,000, street paving, No. of Baker Blvd., RICHLAND HILLS, BY FORT WORTH, TEX., City, City Hall, Richland Hills, Tex. Bids Apr. 25. CD 4-14.

Geer-Milkus Constr. Co., Grand Island, Neb., LB $486,819, est. $457,675, (7 bidders), chapel, educational wing and commissary store, Grand Forks Air Force Base, ENG-25-066-59-98, GRAND FORKS, N. D. U. S. Eng., 1709 Jackson 2, Neb. Bids Apr. 28. CD 3-30.

P. C. Sorenson Co., P. O. Box 4093, Dallas 8, Tex., LB $459,591, est. $500,000 Contr. 4" 45 in. water supply line, ABILENE, TEX., City, City Hall, Abilene, Tex.; Freese, Nichols & Endress, 407 Danciger Bldg., Fort Worth, Tex., engrs. Bids Apr. 28. CD 4-1.

Harry Newton, Inc., P. O. Box 839, Graham, Tex., LS $324,500, est. $350,000 Contr. 3, Fort Phantom Hill Lake Pump Station (Abilene, Tex.)

▲ COLORADO—State Hy. Dpt., 4201 East Arkansas, Denver. Bids opened 4-28.

L. H. Kilgroe Constr. Co., 7991 West 6 Ave., Lakewood, Colo., LB $1,658,758, est. $1,748,000, b. conc., 3.068 mi. Colorado Proj. 1-25-2-28) 145, Unit No. 1, El Paso Co. CD 4-20.

BUILDINGS—LB & CA

▲ Bor-Son Constr., 1209 West 28th St., Minneapolis, Minn., CA $1,343,600 (17 bidders), general contract, JUNIOR-SENIOR HIGH SCHOOL, RICHFIELD, P.O. MINNEAPOLIS), MINN. Bd. Educ., Richfield, Minn. Bids Apr. 29. CD 4-15.

▲ Gamble Constr. Co., 6740 Wise Ave., St. Louis 10, Mo., CA Est. $1,750,000, general contract 2 story, brick, rein. con., steel, etc., JUNIOR SEMINARY, Schoettler Rd., mile north of Dorsan Rd., ST. LOUIS COUNTY, MO., Marykmoll Fathers, 4569 West Pine Blvd., St. Louis 8, Mo. Bids Apr. 28. CD 4-3.

Texarkana Constr. Co., 2819 Boulevard, Texarkana, Ark., LB $677,189, 50 bed HOSPITAL addn., CAMDEN, ARK., Ouachita County Hospital, Court House, Camden, Ark. Bids Apr. 14. CD 3-17.

Munday Co., 1708 W. 8 St., Amarillo, Tex., Owner Builds, $409,200, 26 DWELLINGS, AMARILLO, TEX. CD 4-24.

▲ LeRoy B. Walker, Builder-Developer, 5666 Willers Way, Houston, Tex., Owner Builds, $1,116,000, 66 DWELLINGS, site of Old Fairground Property, BAYTOWN, TEX., Broyles & Bynum, Baytown, Tex., archts. CD 9-8.

A. J. Brennan & Co., Inc., 3475 Royal Lane, Dallas, Tex., Owner Builds, $429,500, 12 DWELLINGS; $425,000, 8 DWELLINGS, DALLAS, TEX. CD 4-30.

Educators Industries, Inc., 3601 Bonzer St., Fort Worth, Tex., CA $410,000, 32-lane brick, stone, BOWLING ALLEY, Hy. 183 and S. W. Loop, incl. 2 nurseries, restaurant, snack bar, FORT WORTH, TEX., Riddell Bowling Properties, Inc., c/o Kneer & Hamm, archts., 1804 Cont. National Bank Bldg., Fort Worth, Tex. Awarded Apr. 27.

R. C. Mahon Co., P. O. Box 4666, Detroit 34, Mich., CA $538,835, metal siding and roofing for B-58 ENGINE RUN STATIONS (12), FORT WORTH, TEX., Convair Div., General Dynamics, Grants Lane, Fort Worth, Tex. Awarded Apr. 28. CD 4-10, under LB.

Frank E. Bonner, Longwood Lane, Houston, Tex., Owner Builds, $400,000, COMMERCIAL BLDG., UNIT 2, HOUSTON, TEX., Joe B. Reynolds, 2480 Times St., Houston, Tex., archt. CD 6-16.

Deutsch-Lewisville Co., Lewisville, Tex., Owner Builds, $445,000, 40 low price DWELLINGS; $411,500, 45 DWELLINGS, Lakeland Terrace No. 1 Subdivision, LEWISVILLE, TEX. CD 4-24.

Jas. T. Taylor & Son, Inc., Box 225, Fort Worth, Tex., CA $749,854, BASE BID HIGH SCHOOL and SCHOOL addns., PERRYTON, TEX., Perryton Ind. School Dist., Perryton, Tex. Bids Apr. 21. CD 4-30, under LB.

C. L. Browning Constr. Co., Box 606, 903 Basse Rd., San Antonio, Tex., CA $419,000, OFFICE, SAN ANTONIO, TEX., Richard Gill Co., Gunter Bldg., San Antonio, Tex. CD 4-22.

▲ Brown & Lampkin, 302 A St., Houston, Tex., Owner Builds, $1,074,900, 160 DWELLINGS, SOUTH HOUSTON, TEX. CD 9-4.

▲ Long Constr. Co., 1165 South Penn, Denver, Colo., CA $1,315,000, Southgate Shopping Plaza, SHOPPING CENTER, Arapahoe Rd. and Holly St., Denver, Colo., Ralph L. Walker & Assocs., 1 Rockefeller Plaza, New York, N. Y., archts. CD 4-20.

(Continued on page 162)

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Name the combination of requirements . . . and chances are you'll find them met by a Rollway Maximum precision radial cylindrical roller bearing. If not, then Rollway engineers will modify any factor to meet your application.

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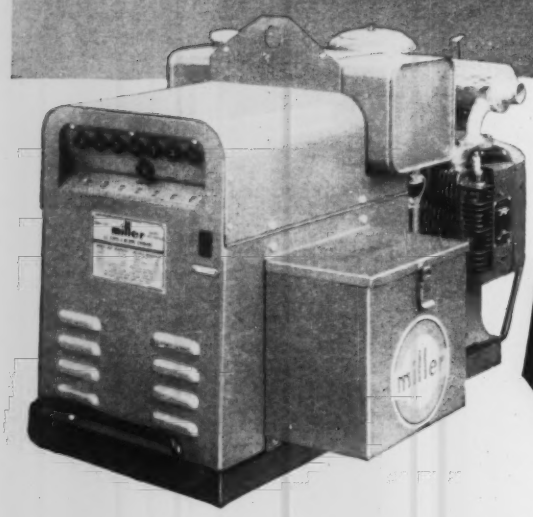

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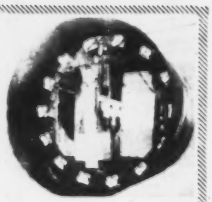

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TUNNEL AND MINE EQUIPMENT
Lancaster, Penna.

(Continued from page 160)

PING CENTER, W 72 Ave and Federal Blvd., WESTMINSTER, COLO. Dunton Realty Co., Westminster Plaza Co., 403 Midland Savings Bldg., Denver, Colo. Bids Mar. 3. CD 3-12, under LB.

FAR WEST

HEAVY CONSTRUCTION—BA

▲† CALIFORNIA (BA 5-26)—U. S. Eng., 1209 B St., Sacramento, channel improv. and levee constr., Cherokee Canal, Lower Butte Basin to Southern Pacific Railroad, Spec. 2549, ENG-04-167-59-59, $1,000,000. CD 10-13-55.

▲ Calif., Mountain View—BA 6-2—City, City Hall, street improvs., incl. storm drains, water mains, sewers, curbs, gutters, street paving and lighting, sidewalks between Whisman Rd. and Mountain View-Alviso Rd., $1,000,000. CD 1-20-58.

BUILDINGS—BA

Calif., Los Angeles—INDUSTRIAL ARTS—BA 5-29—Los Angeles Bd. Educ., 1425 S. San Pedro St., Industrial Arts Bldg.; Huntington Park High School, $423,000; V. W. Nibecker, 2741 Grand Ave., Huntington Park, archt. CD 5-4.

HEAVY CONSTRUCTION—LB & CA

Doughty Constr. Co., 2710 Blueberry Lane, Anchorage, Alaska, LB $392,545 (7 bidders), street, curb, gutter, sidewalk and storm sewer improvs. on 33 blocks, Group B, LB $522,363 (7 bidders), street, curb, gutter, sidewalk, and storm sewer improvs. on 56 blocks, Group A, ANCHORAGE, ALASKA, City, City Hall, Anchorage, Alaska. Bids Apr. 23. CD 4-3.

UTAH—State Rd. Comm., State Capitol, Salt Lake City. Bids opened 4-28.

W. W. Clyde, Springville, Utah, LB $614,354, bit. surf. and concrete structure, 0.453 mi., I-70-4 (1) 17e, Grant Co.

WASHINGTON—State Hy. Comm., Olympia. Bids opened 4-28.

Wash.—J. E. Alexander, P.O. Box 3583, Seattle, Wash., LB $557,070 (22 bidders), 2 steel truss bridges over Yakima and Naches River and precast prestressed bridge for Selah interchange structure on 0.108 mi., Primary St. Hy. 3, FAP Nos. UI-82-1(1) and UI-82-1(4), Yakima Co.

Wash.—Ostruske-Murphy, Inc., 1515 Center St., Tacoma, Wash., LB $186,986 (12 bidders), 2 reinforced box girder bridges for Military Rd. overcrossing in Lake District vicinity, on 0.038 mi., Primary St. Hy. 1, FAP No. I-4-1(6)41345, King Co. CD 4-13.

▲ WASHINGTON—State Hy. Comm., Olympia. Bids opened 4-28.

Wash.—Harrison Bros. Co., Inc., 225 Wakefield Dr., Tacoma, Wash., LB $233,854 (5 bidders), grading, surf., constr. cement-treated base and bit. surf. treatment and b. conc. paving, 4.431 mi., Secondary St. Hy. S-N, Graham to Mitchell-Gould County Rd., FAS No. S-0391(1), Pierce Co.

Wash.—Strong & Macdonald, Inc., 4045 Ruston Way, Tacoma, Wash., LB $626,068 (8 bidders), grading, surf., b. conc. paving, constr. cement-treated base and bit. surf. treatment and signing, 3.183 mi., Primary St. Hy. 9, East Beach Rd. to Indian Creek, FAP No. F-007-2(8), Clallam Co. CD 4-13.

▲ CALIFORNIA—State Div. Hys., 1120 N. St., Sacramento. Bids opened 4-29.

Gibbons & Reed, 825 W. 9th N., Salt Lake City, Utah, LB $5,094,662 (10 bidders), grading, paving to constr. 4-lane freeway, U.S. Hy. 99 bet. 1 mi. south of Castella and 0.7 mi. south of Siskiyou Co. line, incl. 4 structures, 11-SHA-3-D, Shasta Co. CD 3-26.

▲ CALIFORNIA—State Div. Hys., 1120 N. St., Sacramento. Bids opened 4-29.

McGuire & Hester, 7420 64th Ave., Oakland, Calif., LB $1,143,864 (7 bidders), grade, surf. 1.7 mi. McHenry Ave. to widen 2 lane hy. to 4 lanes between Needham St. and Modesto Irrigation Dist. Lateral, three, incl. storm drainage facilities, N. Sta. 109 Mod-A, Stanislaus Co. CD 4-1.

Mayfair Constr. Co., 5114 Venice Blvd., Los Angeles, Calif., CA $621,000, public works yard and maintenance facilities, BURBANK, CALIF. City, 275 E. Olive Ave., Burbank, Calif. Bids Apr. 22, awarded Apr. 29. CD 4-2.

N. A. Artukovich, 724 Union St., Montebello, Calif., CA $868,673. Proj. 14, D.D. 1, 26" relief trunk sewer, Unit 2, East Los Angeles, LOS ANGELES, CALIF., Los Angeles County Flood Control Dist., 2250 Alcazar St., Los Angeles, Calif. Bids Apr. 17, awarded Apr. 28. CD 4-25, under LB.

Bosko Constr. Co., 8120 Fishman Rd., Pico, Calif., LB $619,878. 16" pipeline, Unit 1, Proj. 14, Venice Interceptor Sewer relief, LOS ANGELES, CALIF., City Hall, Los Angeles, Calif. Bids Apr. 29. CD 4-8.

BUILDINGS—LB & CA

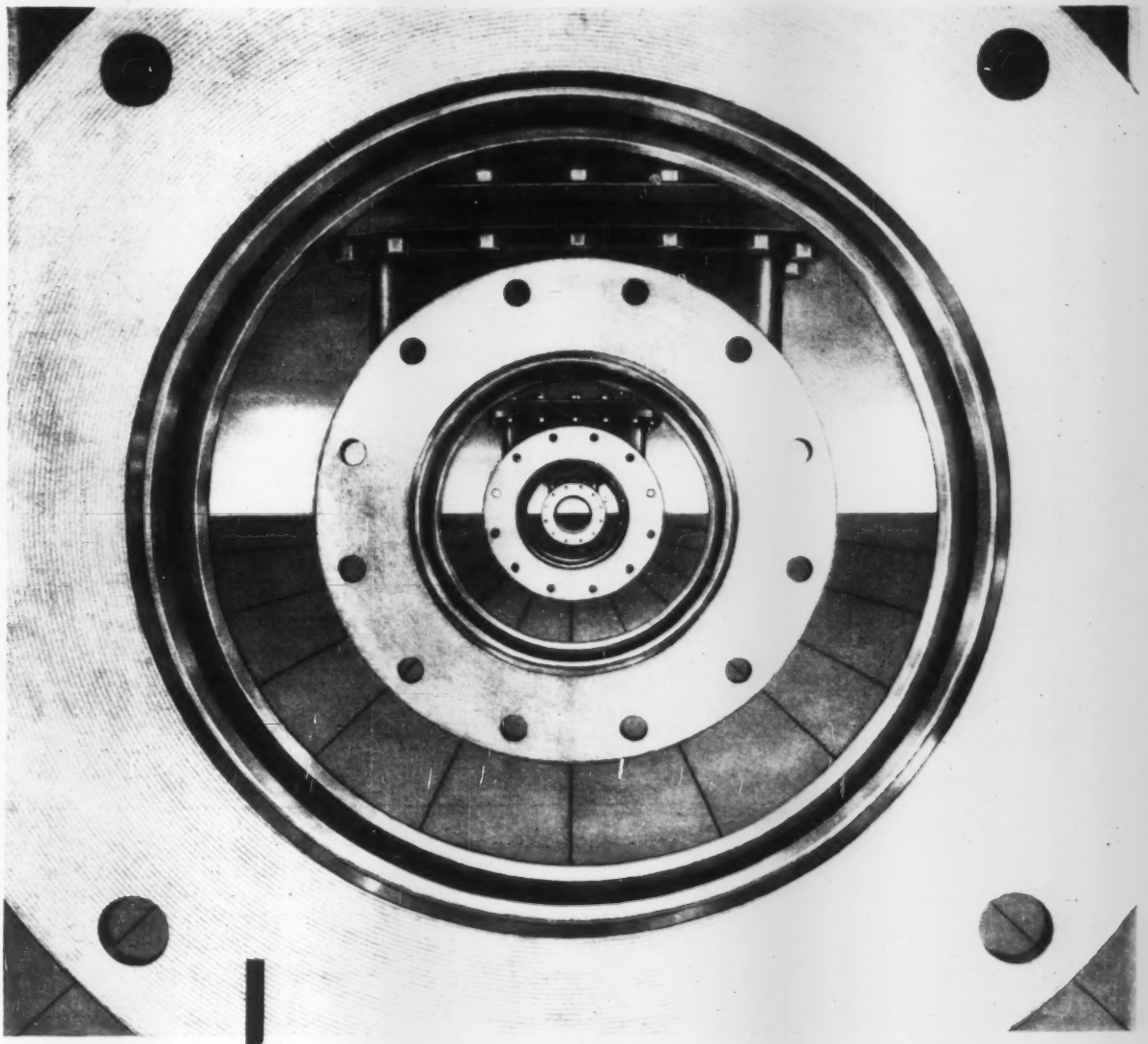
▲+ Brown-Boveri, Inc., 19 Rector St., New York, N.Y., LB $1,165,000 (7 bidders), Schedule A, TURBO-GENERATORS, for Missile installation, Proj. 59-51, CLEAR, ALASKA, U.S. Eng., P.O. Box 7002, Anchorage, Alaska. CD 12-5.

Erie Iron Works, South Tower, Seattle 4, Wash., LB $881,300 (7 bidders), Schedule B, PIPE, FABRICATED, for Missile installation, Proj. 59-51, CLEAR, ALASKA.

North American Aviation, Inc., 4515 Ardmore Ave., Canoga Park, Calif., Owner Builds, $960,000, 2 story concrete MANUFACTURING BLDG., 6600 Canoga Ave., CANOGA PARK, CALIF., Kenneth H. Nesbitt, 441 Beverly Dr., Beverly Hills, archt. CD 3-14.

Leonard Semas & Co., 1872 Lexington St., Santa Clara, Calif., LB $415,777, Panama ELEMENTARY SCHOOL,

(Continued on page 164)



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(Continued from page 162)

CUPERTINO, CALIF. Cupertino Union Elementary School, 10300 Vista Dr., Cupertino, Calif. Bids Apr. 28. Kai H. Porter & Geo. S. Nolte, Architects and Engineers, 3850 Middlefield Rd., Palo Alto, archts. CD 11/11/57.

Christensen & Foster Co., 4795 Redwood Hy., Santa Rosa, Calif., LB $607,000, 1 story, h-mint, 28,000 sq. ft. Type 3, 100-bed NURSING HOME. EUPPA, CALIF. Humboldt County, Courthouse, Eureka, Calif. Bids Apr. 28. CD 4/9.

▲ Phillip Yousem Constr. Co., 1500 Lincoln Blvd., Venice, Calif., LB $11,100,000 (5 bidders), 410-unit Capehart HOUSING, Naval Air Station NBy 18274, LEMOORE, CALIF. P. Wks. Office, 12th Naval Dist., Room C-112, San Bruno, Calif. Bids Apr. 30. CD 4/13.

Ray Gerhart, 231 S. Pasadena Ave., Pasadena, Calif. CA $800,000, 3-story LABORATORY addn., PASADENA, CALIF. California Institute of Technology, 1201 E. California St., Pasadena, Calif. CD 10/23.

▲ Marine Development, Inc., 2170 Avenida De La Playa, La Jolla, Calif., CA $1,040,879, 111 DWELLINGS Arrowwood Dr., Goldcrest Lane, Woodbine Way, SAN DIEGO, CALIF. Heritage, Inc., Box 1122, La Jolla, Calif.

Bly Stein Co., 1758 S. La Cienega Blvd., Los Angeles, Calif., CA $620,000, 232x544 ft. WAREHOUSE and OFFICE, 9175 San Fernando Rd., SUN VALLEY, CALIF. Century Products, 10928½ Pico Blvd., Los Angeles, Calif.

CANADA

BUILDINGS—LB & CA

Burns & Dutton Concrete & Constr. Co., 5720 4 St. S.E., Calgary, Alta., CA $540,000, supplying, erecting structural steel and rein.con. for COURT HOUSE and LAND TITLES BLDG., CALGARY, ALTA. Dpt. P. Wks., Parliament Bldgs., Edmonton, Alta. Bids Apr. 9. CD 3/26.

Burns & Dutton Concrete & Constr. Co. Ltd., 9004 125th Ave., Edmonton, Alta., CA Est. $890,000, rein.con., structural steel JUVENATE, southern outskirts of Edmonton on North Saskatchewan River, EDMONTON, ALTA. Redemptorist Fathers Order, c/o Gardiner, Thornton, Gathe & Assocs., archts., 1520 Alberni St., Vancouver, B. C. Awarded Apr. 27. Read, Jones & Christoffersen, 1161 Melville St., Vancouver, B. C., engrs. Diamond, Clarke & Assocs., 11540 Jasper Ave., Edmonton, Alta., assoc. archts.

Howden Constr. Co. Ltd., 1877 Marine, North Vancouver, B. C., LB $623,258, 9 story, 90x135 ft., rein.con., pre-cast concrete and glass APARTMENT, VANCOUVER, B. C. B. C. Teachers Co-operative Federation, 1815 W. 7, Vancouver, B. C. Gerald Hamilton, 1350 W. Pender, Vancouver, B. C., archt. Read, Jones, Christoffersen, 1161 Melville, Vancouver, B. C., engrs.

Peter Leitch Constr. Ltd., 170 Scott St., Winnipeg, Man., LB $690,000, P. T. and RECREATION BLDG., Canadian Army Camp, CAMP SHILO, MAN. Defence Constr. 1951 Ltd., 56 Lyon St., Ottawa, Ont.

▲ Bernard Lyon Frishman Enterprises, 719 Somerset St. W., Ottawa, Ont., Tower Builds., $1,000,000, T-shaped 53 x 120 ft. structural steel frame, brick APARTMENT, Springfield Rd., OTTAWA, ONT. CD 3/26.

AMERICANS ABROAD

BUILDINGS—LB & CA

▲ Taisei Constr. Co., Tokyo, Japan, CA Est. $7,900,000, 14-story HOTEL, DJAKARTA, INDONESIA, National Industrial Bank & Housing Corp., Djakarta, Indonesia. Eero Saarinen, West Long Lake Rd., Bloomfield Hills, Mich., U.S.A., archt.

PROPOSED PROJECTS

WATER SUPPLY

▲ Conn., New Britain—City, City Hall, storage reservoir, Panther Swamp, $1,000,000.

Conn., New Britain—City, City Hall, water lines and pumping station to connect New Britain water sys. to Metropolitan Dist., Hartford, lines for emergency water supply from NePaug to Whigville, $675,000.

Ill., Park Ridge—City, City Hall, voted bond issue referendum Apr. 21, WW imprv. to increase capacity 21 in. main to connect South Park Reservoir and pump station with Chicago's Supply at Canfield Rd., constr. ground pump station, $500,000. Consoer, Townsend & Assocs., 360 E. Grand Ave., Chicago, consult. engrs. CD 3/22.

▲ Ill., Rock Island—City, City Hall, water sys. extens., imprvs., $1,250,000.

Mo., Kirksville—City, City Hall, defeated $500,000 bonds Mar. 31, WW imprvs. Larkin & Assocs., 19 E. Gregory Blvd., Kansas City, Mo., consult. engrs. CD 4/17.

SEWERS, WASTE DISPOSAL

Conn., Wallingford—Town, Town Hall, relocation sewers to be caused by construction Rte. 91, $600,000. Bowe-Albertson & Assocs., 75 West St., New York, N. Y., consult. engrs.

Miss., Ocean Springs—Town, Town Hall, sewage disposal plant, $880,000. Owen & White, 6454 Choctaw Dr., Baton Rouge, La., consult. engrs. Bids Mid-Summer 1959. CD 3/2.

▲ Miss., Pascagoula—City, City Hall, rebuilding sewage disposal plant and extension of sewer lines, etc., $1,000,000.

Mo., Kirksville—City, City Hall, defeated $806,000 bonds Mar. 31, sewerage sys. imprvs. Larkin & Assocs., 19 E. Gregory Blvd., Kansas City, Mo., consult. engrs. CD 3/17.

N. Y., Canastota—Village of Canastota, Village Hall, sewage treatment plant and sewerage lines, $535,980.

N. Y., Wallkill—Town, sanitary sewerage sys. and treatment plant, $700,000. (State Aid Planning Funds Allotted).

▲ N. Y., Webster—Town, sewerage sys., treatment plant, $1,500,000. CD 4/14/55.

Pa., Montrose—Boro Council, Boro Hall, lateral and trunk sewers, force main, pumping station, repairing treatment plant, $675,000.

▲ Tenn., Chattanooga—City, City Hall, 7,700 ft. sewer lines in annexed area of Woodmore to Indian Hills, 8,300 ft. Eastdale Main Line, 19,750 ft. East Brainerd, $1,500,000. CD 11/8/57.

▲ Tex., Lamesa—City, defeated bonds Apr. 7, sanitary sewer lines, $300,000; sewage disposal unit, S.E. section of city, $90,000; storm sewers, $110,000; moving, reerecting, enlargement of sewage disposal plant, $500,000. CD 2/17.

▲ Tex., Port Arthur—City, City Hall, sanitary sewage disposal plant, $2,500,000. Freese, Nichols, Turner & Collie, C&I Life Bldg., Houston, consult. engrs. CD 4/15.

▲ B. C., Vancouver—Greater Vancouver Sewage & Drainage Dist., 2294 W. 10 St., rein.con., concrete block sewage treatment plant, West Vancouver, $1,000,000. K. E. Patrick, 2294 W. 10 St., engr. CD 11/19/52.

BRIDGES

CALIFORNIA—State Div. Hys., 1120 N. St., Sacramento. Sacramento Co.—two parallel bridges over American River, FAS Co. Rd. 933 (Watt Ave. Exten.) about 2 mi. east of Sacramento, $950,000. Bids soon.

Calif., Glendale—City, City Hall, railroad underpass, Glendale Blvd. and S.P. R.R., $750,000. Wm. Martin, C.E., owner, engr.

▲ Md., Baltimore—City, Bureau Hys., Expressway Div., 303 Municipal Bldg., Zone 2, section Jones Falls.

(Continued on page 169)

Gritty mud would mar the markings on most tapes!

This Chrome Clad® tape is Lufkin's 50-foot ANCHOR model. It *looks* quality in its hand-sewn leather case . . . it *is* quality.

A special kind of electroplating protects the tape from the damage of mud, sand and grit. The bold black markings are bonded to the steel base . . . protected by layer after layer of electroplating . . . topped by a final coat of tough chromium. Glare free, corrosion resistant, longer lasting—this is the tape preferred by every professional. Available with markings in feet, tenths and hundredths.

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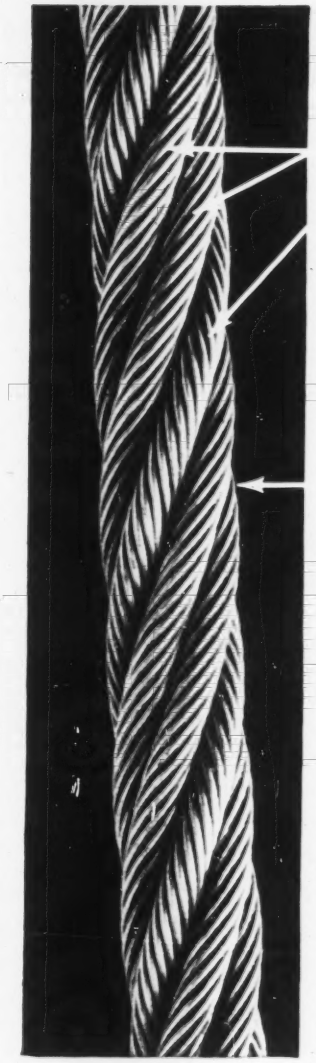

Herringbone's two pairs of Lang lay strands and one pair of regular lay strands provide the ideal combination of maximum flexibility with good stability.

Finer wires inside contribute to Herringbone's excellent drum-winding characteristics.

Heavier outside wires in each strand have greater resistance to abrasion.

"...and it has a much longer life"

GASKILL CONSTRUCTION COMPANY

The above quote is one of the things that Gaskill Construction Company says about the new Roebling Herringbone* Wire Rope. There are further quotes: ". . . We, after giving your Herringbone cable a great deal of use, find that it is far superior to any other cable and it is much more economical."

These are *user* statements about the newest design development in wire rope in many years. Herringbone is the regular lay and Lang lay wire rope. It is two-ropes-in-one rope, with the best features of each in combination. It has been used, with the same success quoted here, on a wide variety of machines as well as on tough hoisting jobs. Its potential is virtually unlimited wherever all-steel ropes are specified and on most installations where fiber core ropes are standard.

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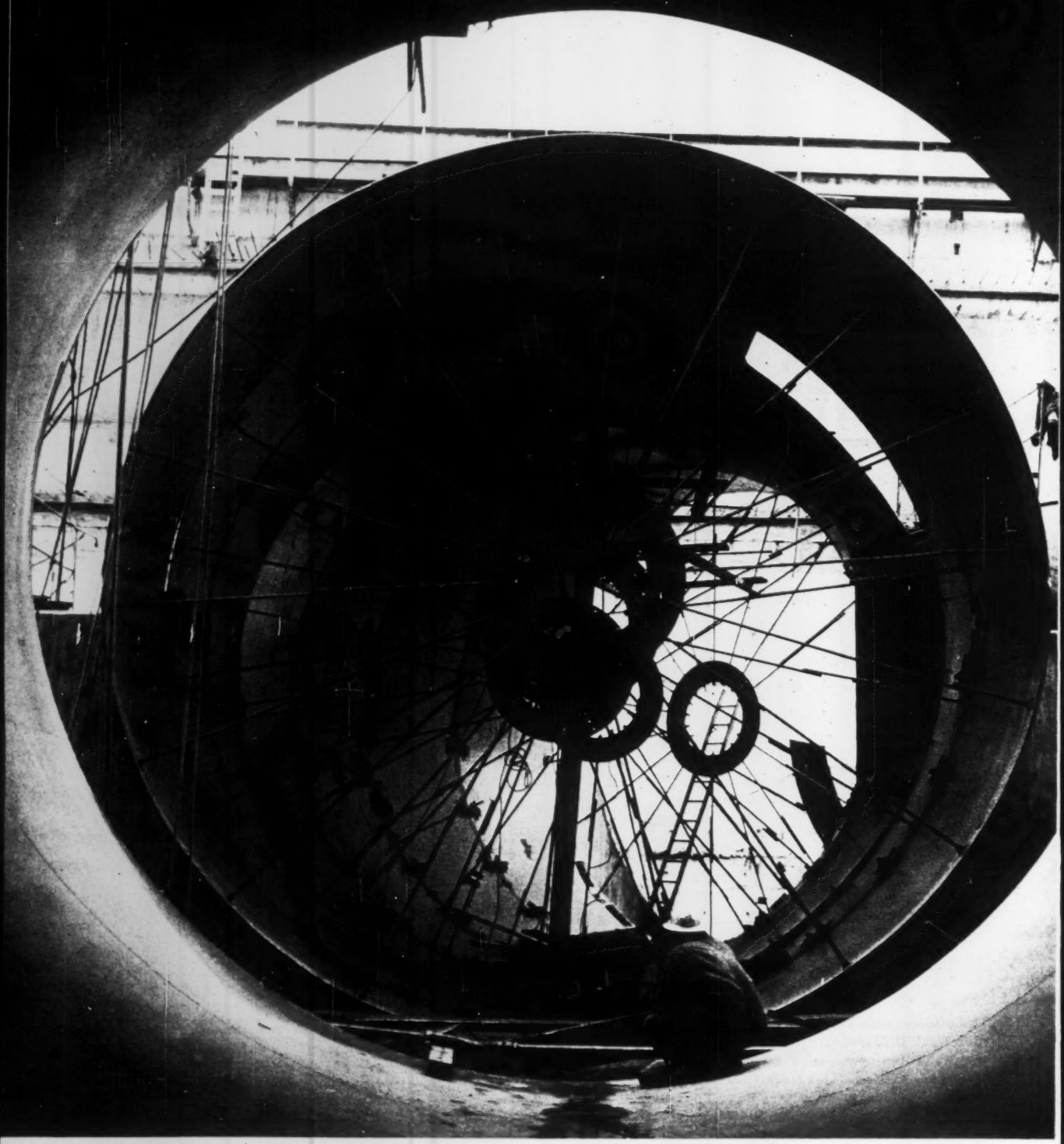

Good fabrication and welding properties of "T-1" Steel saved time and money in the shop and on location.

"T-1" Steel cuts weight of biggest turbine scroll cases 50%

A SCROLL CASE looks like a giant sea shell. Water gushes into it from a high level reservoir. Through the conch, the water swirls in an ever-tightening spiral into the blades of water turbines. Because the cross section of the spiral passage diminishes, the water pressure and velocities are built up for efficient power generation. Four of these scroll cases, the largest in the United States, have been built from USS "T-1" Steel by the Chicago Bridge & Iron Company. They are installed in the Noxon Rapids Dam, an $87 million project now under construction by the Washington Water Power Authority to harness the waters of Clark Fork River. The dam is located on the site of a prehistoric lake in western Montana.

Because of the fierce pressure and erosive action of the water, it was obvious that a very strong, abrasion-resisting steel was required. USS "T-1" Constructional Alloy Steel not only met these requirements, but permitted a reduction of about 50% in plate thickness.

COST SAVINGS. By using USS "T-1" Steel, there was substantially less weight of material to ship across the country. Weld time and weld metal were reduced. Foundations could be made smaller.

This job points up the economies possible with the use of USS "T-1" Steel: lighter weight, greater strength, weldability and resistance to impact abrasion. Write for our "T-1" Steel book containing complete information. United States Steel, Room 2801, 525 William Penn Place, Pittsburgh 30, Pa.

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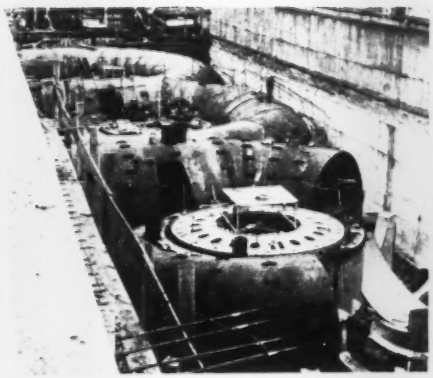
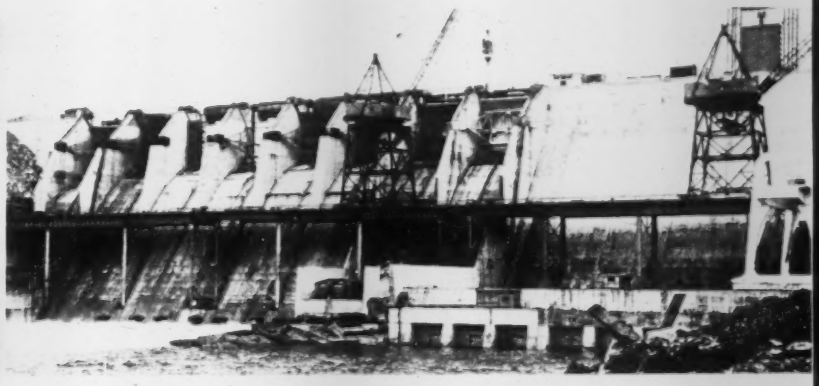


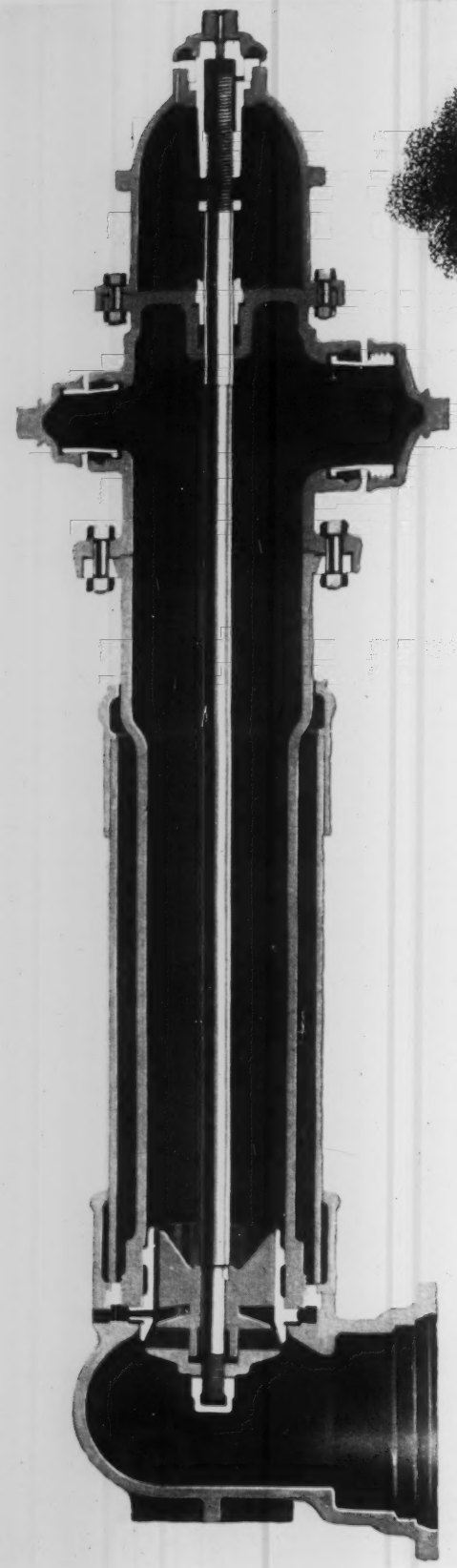
Nation's largest scroll cases. Built with USS "T-1" Steel to obtain maximum strength with the least weight. Largest diameter is 24 feet with a speed ring about 28 feet in diameter.



Noxon Rapids Dam, a new $87,000,000 power project by the Washington Water Power Authority to harness the waters of Clark Fork River in western Montana. General Contractor: Morrison-Knudsen Company.

United States Steel Corporation – Pittsburgh
Columbia-Geneva Steel – San Francisco
Tennessee Coal & Iron – Fairfield, Alabama
United States Steel Supply – Steel Service Centers
United States Steel Export Company

United States Steel



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and many other quality features, too

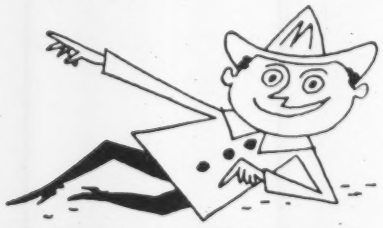
Replaceable barrel for maximum efficiency—quickly replaced in case of accident without excavating

Head revolves 360°; simply loosen bolts and rotate

Stuffing box plate cast integrally with nozzle section—eliminates extra part and provides positive, leakproof construction

Operating thread, protected by stuffing box plate, operates free of rust, sediment and ice

Also . . . Nozzle sections supplied with hose or pumper outlets as specified • Operating thread cannot be bent • Compression-type main valve prevents broken Mathews from leaking • Nozzle level can be raised or lowered without excavating • Bell, mechanical-joint, or flange-type pipe connections • Conventional or "O" ring packings



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Public Ledger Building, Independence Square, Philadelphia 5, Pa.

Manufacturers of "Sand-Spun" Pipe (centrifugally cast in sand molds) and R. D. Wood Gate Valves

(Continued from page 164)

Expressway, Belvedere Ave. Bridge and Interchange, $4,900,000. W. L. Chilcote, c/o owner, engr. CD 7-24-52, under Streets and Roads.

▲ ONTARIO—Dpt. Hys., Parliament Bldg., Toronto. St. Catherines—o-plane Homer Bridge over Welland Ship Canal, near St. Catherines, $15,000,000. Foundation of Canada Engineering Corp. Ltd., 8 Spadina Rd., Toronto, consult. engrs.

STREETS AND ROADS

▲ CALIFORNIA—State Div. Hys., 1120 N. St., Sacramento.

Contra Costa Co.—slide removal, roadway repairs and drainage facilities, 1.2 mi. FAS Co. Rd. 801 (Crow Canyon Rd.) between Alameda Co. line and State Sign Rte. 21, $190,000. Bids soon.

Fresno Co.—grade, surf. to reconstr. and widen 6 mi. FAS Co. Rd. 811 (Nees Ave.) between Fairfax Ave. and Firebaugh city limits, incl. bridges over San Joaquin and Kings River Main and outside canals, $360,000. Bids June or July.

Los Angeles Co.—grade, surf. to constr. 4 lane divided hy. 2.4 mi. FAS Co. Rd. 849 (Arrow Hy.) between Glendora and Amelia Aves. about 3 mi. S.E. of Azusa, $700,000. Bids in September.

San Luis Obsipo Co.—surf. to reconstr. and widen 3.5 mi. FAS Co. Rd. 673 (Paso Robles-Creston Rd.) bet. Geneseo School and State Hy. Rte. 125 about 1 mi. north of Creston, $275,000. Bids June or July.

Siskiyou Co.—base material and seal coating as stage of reconstr. widening and realignment FAS Co. Rd. 1089 (West Side Rd.) between Callahan and Cedar Gulch and between 1.2 mi. north of Fay Lande and State Hy. Rte. 82 at Etna, $410,000. Bids soon.

Trinity Co.—base material and drainage facilities as stage reconstr. and widening 6.2 mi. FAS Co. Rd. 1089 (Scott Mountain-Minersville Rd.) between 0.3 mi. north of Covington Mill and Swift Creek Bridge about 2 mi. South of Trinity Center, $222,000. Bids soon.

Tulare Co.—surf. to reconstr. and widen 3 mi. FAS Co. Rd. 1143 (Ave. 280) between State Sign Rte. 63 and Rd. 140 about 1 mi. south of Visalia, $150,000. Bids in July.

Ill., Calumet City—City, City Hall, bond referendum defeated Apr. 21, street imprvs. and repairs, $650,000. Consoer, Townsend & Assocs., 360 E. Grand Ave., Chicago, consult. engrs. CD 4/2.

▲ Ill., Chicago—Dpt. Purchases, City Hall, Zone 2. bit. resurf., widening Austin Ave., Argyle St. to Elston Ave., $145,000. Bids in September.

bit. resurf., widening Belmont Ave., Western to Milwaukee Aves., $87,000. Bids in August.

bit. surf., widening Kostner Ave., 31 to 26 Sts., $110,000. Bids late 1959.

bit. resurf. and channelization Milwaukee Ave., Carmen to Elston Aves., $295,000. Bids in September.

bit. resurf., widening Touhy Ave., Ridge Ave. to Sheridan Rd., $250,000. Bids in 1959.

bit. resurf., widening and channelization Wilson Ave., Clark St. to Clarendon Ave., $110,000. Bids late 1959.

bit. resurf., widening, channelization W. 55 St., Western to Cicero Aves., $500,000. Bids late 1959.

widening, bit. resurf. W. 71 St., Pulaski Rd. to California Ave., $190,000. Bids 1959.

bit. resurf., widening 83 St., Dorchester to Anthony Aves., $100,000. Bids late 1959.

bit. resurf., widening, channelization W. 84 St., South Chicago Ave. to South Shore Dr., $190,000. Bids 1959. Lloyd M. Johnson, City Hall, Zone 2, engr.

Iowa, Davenport—City, City Hall, street and alley paving etc., $557,774. Program for 1959.

▲ Md., Baltimore—City, Bureau Hys., Expressway Div., 304 Municipal Bldg., Zone 2, section Jones Falls, 24th St. Interchange and bridge, $3,500,000. W. L. Chilcote, c/o owner, engr. CD 7-24-52.

▲ Mo., St. Louis County—St. Louis County, Court House, Clayton, Zone 5, imprv. Hereford Ave., Florissant to Elizabeth Aves., $600,000. R. W. Booker & Assocs., 1722 Olive St., St. Louis, Zone 3, consult. engrs. CD 10-3-57. Imprv. New Florissant Rd., US 66 to Harrison St. in Florissant, Mo., $550,000. R. W. Booker & Assocs., 1722 Olive St., St. Louis, Zone 3, consult. engrs. CD 11-29-55. Imprv. Reavis Barracks Rd., Green Park Rd. to Lemay Ferry, $103,000. Bids 1959 or 1960. CD 11-29-55. Imprv. Rock Hill Rd., Manchester Rd. to Litzsinger Rd., widen bridge over Deer Creek and road surf. etc., $539,000. Bids 1959 or 1960. widen and imprv. Union Rd., St. Louis City limits southward to Bayless Ave., $293,500. Imprv. Sappington Rd., Missouri Pacific tracks southward to Fidelle and Park Rd., $378,500. 1959 construction. CD 7-13-56. Brown Rd. extension and imprv. Fee Fee Rd. to Interstate Circumferential Hy., $196,000. Imprv. Chambers Rd., West Florissant Ave. to Halls Ferry Rd., $546,000. Bids 1959 or 1960. CD 8-25-55. widen and surf. etc., West Florissant Ave., Wabash RR. right-of-way to Chambers Rd., $530,800. Constr. 1959. CD 5-16-56. John J. Eschen, Court House, Clayton, Zone 5, co. engr.

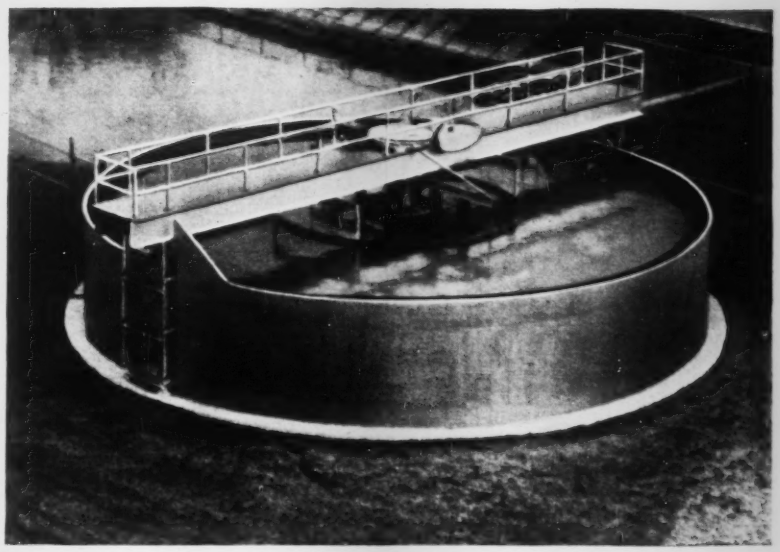
EARTHWORK, WATERWAYS

▲+ Texas—U. S. Eng., Santa Fe Bldg., Galveston. Yegua Creek Dam, Tributary of Brazos River flood control Proj. near Bridge State Hy. 36 which spans Yegua Creek near Somerville, $20,000,000 (no appropriation).

AIRPORTS

▲ Mo., St. Louis—AIRPORT IMPRVS.—City, Bd. of Service, 104 City Hall, Zone 3, voted $10,000,000 bonds Apr. 22 expansion imprvs. at Lambert St. Louis Municipal Airport, $15,000,000. $5,000,000 federal funds also available. CD 4-2-59.

▲ Ore., Corvallis—BOMARC MISSILE BASE—U. S. Eng., 1519 S. Alaskan Way, Seattle 4, Wash. Bomarc



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P-5915

Missile Base, Camp Adair, $4,000,000. Bids next month.

▲ Wash., Seattle—TERMINAL—Port of Seattle, Bell St. Terminal, Zone 1, plans by Young, Richardson & Carleton, Central Bldg., Zone 4, 12 jet positions and 2-level operation terminal, Seattle-Tacoma Airport, $4,000,000. Work expected to begin in 1960. CD 12.12.

▲ † Wis., Madison—BOMARC MISSILE FACILITIES—U. S. Eng., 475 Merchandise Mart, Chicago 54, Ill.: BOMARC missile facilities at Truax Field, $7,500,000-$8,000,000.

LATIN AMERICA

▲ Argentina, Buenos Aires—PLANT—Ford Motor Co., The American Rd., Dearborn, Mich., U. S. A.: truck and engine plant, $12,500,000 (plant bldg. only).

AMERICANS ABROAD

▲ Philippine Islands—Government of Philippines, Manila: dredging channel and turning basin, Manila, $14,000,000. Rader & Assocs., Congress Bldg., Miami, Fla., U. S. A.: consult. engrs.

PUBLIC BUILDINGS

▲ Ala., Huntsville—HOSPITAL—Huntsville Hospital, Bd. of Control, Hospital wing addn., $1,000,000.

▲ Ala., Selma—HOUSING—Procurement Office, Craig Air Force Base, 200 unit Capehart Housing, Craig Air Force Base, $3,300,000.

▲ Ark., Blytheville—HOUSING—Procurement Office, Blytheville Air Force Base, 470 unit Capehart Housing, Blytheville Air Force Base, No. 21, $7,755,000. CD 4.17.57. Under Airports.

▲ Calif., Glendale—SCHOOL—Glendale Unif. School District, 411 E. Wilson St., plans by Woodford & Bernard, 310 N. La Brea Ave., Los Angeles, concrete frame, New York Ave. and Rosemont Ave. Junior High Schools, $3,700,000. Bids May. CD 4.1.9.

Calif., La Puente—SCHOOL—Hudson School Dist., 15654 E. Gale Ave., plans by Kistner, Wright & Wright, 1125 W. 6th St., Los Angeles, Willow School, $500,000. CD 2.26.

▲ † Calif., Lompoc—HOUSING—Procurement Office, Vandenberg Air Force Base, 400 unit Capehart Housing, Vandenberg Air Force Base, No. 3, $6,600,000.

Calif., Long Beach—ADMINISTRATION—Long Beach Bd. Educ., 715 Locust Ave., plans by Francis J. Heinz, 730 E. 3rd St., 4 story administration bldg., addn., $600,000. CD 11.8.54.

▲ Calif., Ontario—SCHOOLS—Ontario School Dist., Ontario, Extension May 14 schools, $1,000,000.

Calif., Santa Cruz—SCHOOL—Santa Cruz City Elementary School Dist., 133 Mission St., San Francisco, bond election June 2, Bayview, Jr. High Addn. and West Side Elementary School, $800,000. Fax & Booth, 24 Beale St., San Francisco, archts. GD 4.30.47.

▲ † Calif., Sacramento—HOUSING—Procurement Office, Mather Air Force Base, 240 unit Capehart Housing, Mather Air Force Base, No. 2, $3,795,000. CD 2.26. Under Airports.

▲ † Calif., Travis Air Force Base—HOUSING—Procurement Office, Travis Air Force Base, Fairfield, 600 unit Capehart Housing, No. 3, $9,900,000.

Conn., Manchester—HOUSING—Manchester Housing Auth., Low Rent, plans by Arnold Lazarow, 572 Park Ave., for 1 housing for the aged, Silver Lane, $750,000. Bolles & Mowery, 127 Main St., Hartford, archts. CD 11.13.

▲ Conn., Wallingford—SCHOOLS—Town Hall, Northeast High School, $3,500,000. Yalesville Elementary School, $750,000. Elementary School, $750,000. North Farms Elementary School, $750,000. Fusk Hill Elementary School, $700,000. elementary school, Pond Hill, Long Hill, $950,000. constr. 1961. Junior High School, North-eastern Section, $1,750,000.

▲ Idaho, Mountain Home—HOUSING—Procurement Office, Mountain Home Air Force Base, 440 unit Capehart Housing, Mountain Home Air Force Base, No. 21, $9,075,000.

Ill., Moline—LIBRARY—City Council defeated Bond issue referendum Apr. 21. (prev.) $750,000. 4.13.

▲ Ill., Springfield—STATE—State Treasurer, $3,000,000. CD 4.11.44.

Ind., Jeffersonville—SCHOOL—Bd. Educ., High School Bldg., plans by Caudill, Rowlett, Scott & Johnson, High School, $900,000.

▲ Ind., Peru—HOUSING—Procurement Office, Bunker Hill Air Force Base, 304 unit Capehart Housing, Bunker Hill Air Force Base, No. 1, $6,600,000.

▲ † Kan., Salina—HOUSING—Base Procurement Office, Smoky Hill Air Force Base, plans by Voorhees, Walker, Foley & Smith, 2910 Topeka Blvd., Topeka, 240 unit Capehart Housing, Smoky Hill Air Force Base, No. 21, $3,960,000.

▲ Ky., Newport—HOUSING—Campbell County Housing Auth., 4th St., plans by Mercer Mather, Morse & Associates, 248 unit low rent housing, Washington Ave., Bellevue, $2,000,000.

▲ † Me., Limestone—HOUSING—Base Procurement Office, Loring Air Force Base, 318 unit Capehart Housing, Loring Air Force Base, No. 1, $1,881,000.

▲ Mass., Norwood—HOSPITAL—Norwood Hospital, 724 Washington St., plans by Campbell, Aldrich & Nulty, 126 Commercial St., Boston, for addn., alterations, Washington St., $2,200,000. CD 7.16.57.

(Continued on page 172)

Blaw-Knox Road Widener lays aggregate for shoulders in conversion of U.S. Highway 31 to Interstate Highway 65 near Birmingham, Alabama. A. E. Burgess Company bought the Blaw-Knox machine especially for the 250,000-yard job.

"We are laying over 2500 cubic yards per day with our Blaw-Knox Road Widener"

"This represents a 50% increase in production over any other system that we know of. Our current cost per-cubic-yard adds up to an approximate $200 saving each day. And the machine requires only one man for its operation," says Sam Sheperd, project director, A. E. Burgess Company, Birmingham, Alabama.

"For example, the Blaw-Knox Widener charges and discharges simultaneously. This makes it possible for us to use 20-yard dump trucks, placing a 20-yard load in five minutes," Mr. Sheperd adds.

Burgess was able to achieve optimum operation exactly one hour after the machine was delivered to the job. He said, "A Blaw-Knox engineer was on hand to instruct the operator and line up the equipment. And since that time, our Blaw-Knox distributor has been out several times to check the operation."

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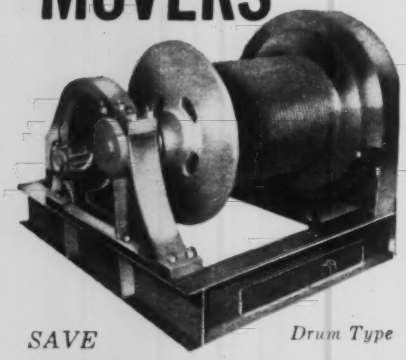

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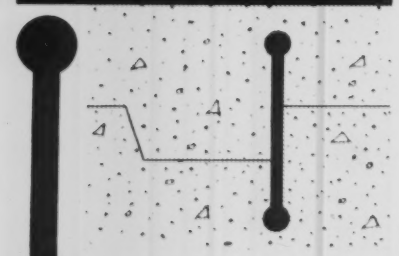

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(Continued from page 170)

▲ Mich., Berrien Springs—SCHOOL—Bd. Educ., plans by Maurer & Maurer, 312 Lafayette Bldg., South Bend, Ind., remodel 1 story school, $1,150,000.

▲ Mich., Berrien Springs—SCHOOL—Fair Plain Public School Dist. plans by G. A. Binda, 231 Capital St. NE, Battle Creek, Mich., 1 story Central school addn., $1,250,000.

▲ Mich., Flint—SCHOOL—Westwood Heights School Dist. 27, 3178 W. Ridgeway St., plans by S. A. Nyrop, 1669 N. Chevrolet, high school and Gillespie Elementary School addn., $1,000,000. CD 1-30-58.

▲+ Mich., Kinross—HOUSING—Base Procurement Office, Kinross Air Force Base, plans by Yost & Taylor, Kenilworth, Ill., 285 unit Capehart Housing, Kinross Air Force Base (No. 2), $4,702,500.

▲+ Mich., Marquette—HOUSING—Base Procurement Office, K. I. Sawyer Air Force Base, 260 unit Capehart Housing, K. I. Sawyer Air Force Base (No. 4), $4,290,000.

▲+ Mich., Oscoda—HOUSING—Base Procurement Office, Wurtsmith Air Force Base, 390 unit Capehart Housing, Wurtsmith Air Force Base (No. 2), $6,435,000.

▲ Mich., South Haven—SCHOOL—South Haven Bd. Educ., plans by Giedo Binda & Assocs., 231 Capital NE, Battle Creek, 1 story, 124,000 sq. ft. high school, $2,160,000.

▲ Minn., Mounds View—SCHOOL—Bd. Educ., Independent School Dist. No. 621, Ramsey, $1,800,000 bond election May 19, Junior High School, Ellerbe & Co., 333 Sibley St., St. Paul, archts.

▲ Miss., Biloxi—HOUSING—Base Procurement Office, Keesler Air Force Base, 240 unit Capehart Housing, Keesler Air Force Base (No. 2), $3,960,000. CD 2-7-57 under Airports.

▲+ Miss., Columbus—HOUSING—Base Procurement Office, Columbus Air Force Base, 340 unit Capehart Housing, Columbus Air Force Base (No. 2), $5,610,000.

Miss., Forest—PLANT—City, City Hall, voted $500,000 bonds Apr. 14, poultry processing plant, Southeastern Hatcheries, Inc., Forest, Miss., and Atlanta, Ga., owners. CD 3-26.

▲+ Mo., Knob Noster—HOUSING—Base Procurement Office, Whiteman Air Force Base, 350 unit Capehart Housing, Whiteman Air Force Base (No. 2), $5,775,000.

Mont., Baker—SCHOOL—Baker High School Dist., Baker, high school, $720,000.

† Mont., Browning—HOSPITAL—Bureau Indian Affairs, Geology Bldg., University of New Mexico, Albuquerque, N. M., Indian Bureau Hospital Addn., $500,000.

▲+ Mont., Glasgow—HOUSING—Procurement Office, Glasgow Air Force Base, plans by Cushing, Servis, Van Doren & Hazard, 2410 Topeka Blvd., Topeka, Kan., 200 unit Capehart Housing, Glasgow Air Force Base (No. 3), $3,300,000.

▲+ Neb., Fort Crook—HOUSING—Procurement Office, Offutt Air Force Base, Omaha, 300 unit Capehart Housing, Offutt Air Force Base (No. 3), $4,950,000.

▲ N. J., New Brunswick—DINING HALLS—Rutgers University, College Ave., plans by Perry, Shaw, Hepburn & Dean, 31 St. James Ave., Boston, Mass., men's dining hall, $3,000,000; women's dining hall, $500,000. Bids late this year. CD 3-8-57.

N. J., New Brunswick—APARTMENTS—Rutgers University, College Ave., plans by Perry, Shaw, Hepburn & Dean, 31 St. James Ave., Boston, Mass., married students apartments, $900,000. Bids next summer, (correction-architect). CD 4-23.

▲ N. Y., Mineola—SCHOOL—Bd. Educ., referendum late June for renovation of Willis Ave. School to convert from seventh and eighth grade to K to 6 school; seventh and eighth grade school, Sayville Rd. between Hawer Pl., Buchanan Ave. and Foch Blvd.; one or two wings high school addn., $3,000,000. George J. Dipell, 124 Merrick Rd., Massapequa, archt.

N. Y., New York—FIREHOUSE—Dpt. P. Wks., Municipal Bldg., Zone 7, Proj. F-53, firehouse for Engine Co. 49 & Ladder Co. 30, Squad No. 1, vicinity 8th and Lenox Aves., between W. 131st and West 135th Sts. for Fire Dpt., $525,000.

▲ N. Y., New York—HOUSING—New York City Housing Auth., 249 Broadway, Zone 7, housing E. 93rd to E. 95th Sts. between First Ave. and F.D.R. Drive, $9,970,000.

▲ N. D., Grand Forks—HOUSING—Procurement Office, Grand Forks Air Force Base, plans by Fox-Stanley Engineering Co., 221 N. 5 St., 304 unit Capehart housing, Grand Forks Air Force Base (No. 2), $5,016,000; 160 unit Capehart Housing, Grand Forks Air Force Base (No. 3), $2,739,000.

▲+ N. D., Minot—HOUSING—Procurement Office, Minot Air Force Base, 420 unit Capehart Housing, Minot Air Force Base (No. 3), $5,280,000.

▲ O., Cincinnati—HOUSING—Cincinnati Metropolitan Housing Auth., 595 Armory, plans by Garrett & Roberts, 2414 Gilbert Ave., 242 unit Winton Terrace housing addn., $2,929,000. CD 1-10-58.

▲ O., Harrison—SCHOOL—Three Rivers Local School Dist., Harrison, plans by Gee, Schatz & Assoc., 324 Main St., Cincinnati, 1 story elementary, brick, steel joist, High School, $1,500,000. Bids September. CD 11-12 under O. Construction.

▲+ O., Kettering—SCHOOL—Bd. Educ., 4001 Ackerman, plans by Rial, T. Parrish, Knott Bldg., Dayton, 1 story Junior High School, $1,100,000. CD 11/12/57.

▲ O., Mansfield—SCHOOL—Bd. Educ., plans by Bellman, Garrett & Richards, 1600 Madison, Toledo, $1,890,000. CD 11-14.

▲+ O., Wilmington—HOUSING—Base Procurement Office, Clinton County Air Force Base, plans by Garriott & Pouhay, Baker & Larson, 1701 5th St., Third Bank Bldg., Cincinnati, Zone 2, 150 unit Capehart Housing, Clinton County Air Force Base (No. 2), $2,475,000.

▲+ Okla., Enid—HOUSING—Procurement Office, Vance Air Force Base, 170 unit Capehart Housing, Vance Air Force Base (No. 2), $2,805,000.

▲ Pa., Bangor—SCHOOL—Bangor Area Jt. School Dist., high school, $2,700,000.

▲ Pa., Youngsville—Brokenstraw Valley Jt. School Dist., elementary school, $1,580,000.

▲+ S. C., Charleston—HOUSING—Procurement Office, Charleston Air Force Base, 350 unit Capehart Housing, Charleston Air Force Base (No. 2), $5,775,000. CD 9-19-51, under Airports.

▲+ S. D., Rapid City—HOUSING—Procurement Office, Ellsworth Air Force Base, 190 unit Capehart Housing, Ellsworth Air Force Base (No. 2), $3,135,000.

▲+ Tenn., Nashville—HOSPITAL—Veterans Admin., Munitions Bldg., Wash., D. C., plans by Edwin A. Keeble & Assocs., 2000 Glen Echo Rd., Nashville, and Eggers & Higgins, 100 E. 42nd St., New York, N. Y., 500 bed VA hospital, adjoining Vanderbilt University, $15,000,000. CD 3-13-56.

▲ Tex., El Paso—HOSPITAL—El Paso County, Courthouse and City of El Paso, City Hall, voted bonds Apr. 14, general hospital, $5,000,000. Garland & Hilles, & Assocs., Banner Bldg., archts. CD 4-8.

▲ Tex., Canyon—STUDENT HOUSING, etc.—West Texas State College, student housing and service facilities, Tex. 41-CH-105DS, $1,630,000.

† Tex., Del Rio—HOUSING—Procurement Office, Laughlin Air Force Base, plans by Roscoe DeWitt, 2025 Cedar Springs, Dallas, 110 unit Capehart Housing, Laughlin Air Force Base (No. 2), $825,000. CD 9-27-54 under Airports.

▲ Tex., LaMarque—SCHOOL—LaMarque Ind. School Dist., plans by Caudill, Rowlett & Scott, archts.-consult. engrs., 4100 Montrose Blvd., Houston, elementary school, $600,000; school remodeling, addn., $500,000. CD 6-1.

▲ Tex., San Antonio—MEDICAL SCHOOL—Bd. Regents, University of Texas, Main Admin. Bldg., Austin, medical school, $6,500,000.

Utah, Farmington—SCHOOL—Davis County Bd. Educ., Farmington, bond election May 5, Clearfield High School addn., 2nd section, $500,000-$600,000. CD 7-11-57.

Wash., Ephrata—HOUSING—Grant Co. Housing Auth., plans by H. Vernier, Moses Lake, 60 unit housing, Moses Lake, $600,000. CD 12-14.

▲+ Wash., Moses Lake—HOUSING—Procurement Office, Larson Air Force Base, 330 unit Capehart Housing, Larson Air Force Base (No. 2), $5,445,000.

▲ Wash., Pullman—ENGINEERING—Washington State College, plans by Cutler, Gale, Wartell & Norrie, Realty Bldg., Spokane, engineering bldg., $1,406,500. Bids in Feb. CD 1-14-57.

▲ Wash., Seattle—BUSINESS ADMIN.—University of Washington, Zone 5, plans by Decker & Christenson, and P. H. Kirk Assocs., 1411 4th Ave. Bldg., Zone 1, business administration bldg., $2,700,000. Bids this year. CD 1-26.

▲ Wis., Kansasville—HOUSING—Procurement Office, Richard I. Bong Air Force Base, 900 unit Capehart Housing, Richard I. Bong Air Force Base, $14,850,000.

▲ Wis., Two Rivers—HOSPITAL—Two Rivers Municipal Hospital Bd., hospital, $1,360,000.

▲ Ont., Windsor—SCHOOL—Windsor Suburban High School Bd. plans by Sheppard & Masson, 52 Chatham St. W., high school, $1,156,000. CD 11-18.

Que., Hull—SCHOOL—Catholic School Comm. of Hull, 9 Hotel de Ville, plans by Rene Richard, 85 Prud'homme St., high school, Laroque Park, $600,000.

Que., La Tuque—INDIAN SCHOOL—Dpt. P. Wks., Hunter Bldg., Ottawa, Ont., Indian School, $500,000.

Que., Montreal—SCHOOL—Montreal Catholic School Comm., 3737 Sherbrooke St. E., plans by Mar Cinq Mars, 1980 Sherbrooke St. W., elementary school, Laval St. near Marie Anne, $500,000.

COMMERCIAL BUILDINGS

▲ Ariz., Phoenix—APARTMENT—J. Edward Goldman, Hotel Gadsden, Douglas, plans by Albert Cruz, 9841 W. Pico, Los Angeles, Calif., 5 story apartment, underground parking garage, $5,000,000.

▲ Calif., Corte Madera—DEPARTMENT STORE—Corte Madera Shopping Center, c/o John S. Bolles, archt., 14 Gold St., San Francisco, 75,000 sq. ft. department store, $4,000,000. Montgomery Ward & Co., owner.

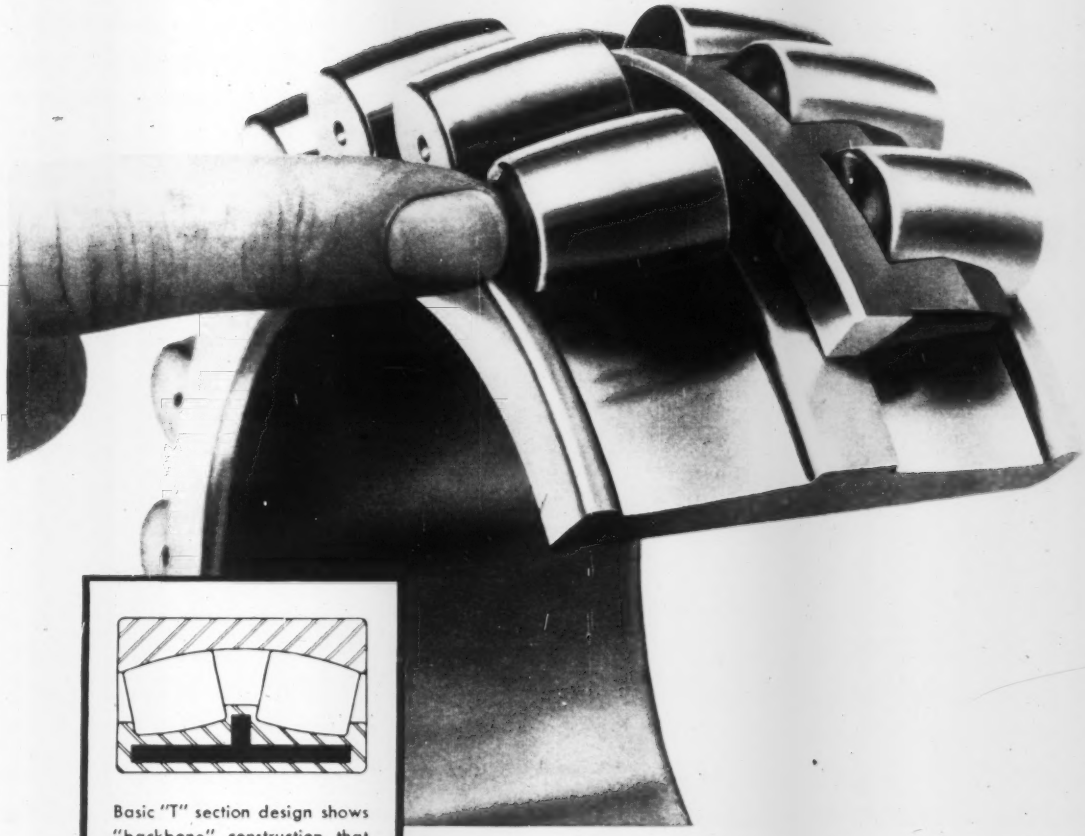
▲ Calif., Pasadena—DEPARTMENT STORE—Broadway Hale Department Stores, 401 S. Broadway, Los Angeles, 37,000 sq. ft. department store addn., modernization, $2,000,000. Quinton Engineers, 812 W. 8th St., Los Angeles, consult. engrs.

Calif., San Francisco—RESIDENTIAL, RECREATIONAL—Knights of Sports, c/o John G. Matter, archt., 1045 Sansome St., San Francisco, 4 story men's residential and recreational bldg., swimming pool, bowling alley, $525,000.

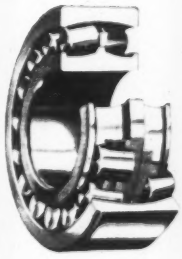
▲ Calif., San Francisco—MOTEL, etc.—De Le Webb Constr. Co., 5101 San Fernando Rd. West, Los Angeles, plans by Martin Stern, Jr., 5525 Wilshire Blvd., Beverly Hills, 2 story motel, swimming pool and bar, S. 8th and Market Sts., $8,000,000.

▲ Conn., Milford—APARTMENT, Terminal Warehouse Constr. Co., 1818 State St., Bridgeport, 2 story 100 garden apartment on former Arnold College Property, Merba St., $1,000,000.

(Continued on page 174)



Basic "T" section design shows "backbone" construction that insures positive roller guidance and stability without skewing under all load conditions.



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Design Engineering Show
Philadelphia • May 25-28

For roller stability...

there's nothing like "the bearing with the backbone"

The only *positive* way to guide rollers is by an integral center guide flange—backbone of the *Torrington* Spherical Roller Bearing. No floating ring can match it for stability under heavy radial and thrust loads.

This "bearing with the backbone" insures true rolling motion . . . prevents stress concentration . . . means minimum friction. It makes possible open-end cage design, too, with no shrouds to impede circulation of lubricant to bearing contact surfaces. There is less heating and more positive lubrication.

The integral center guide flange is adapted from the same principle used in the design of Torrington Tapered Roller Bearings. This refinement is typical of Torrington's uncompromising engineering that assures you the ultimate in bearing performance. **The Torrington Company, South Bend 21, Ind.—and Torrington, Conn.**

TORRINGTON BEARINGS

District Offices and Distributors in Principal Cities of United States and Canada

(Continued from page 172)

Conn., Stratford—SUPERMARKET—John E. Hayes, 170 Sigourney St., Hartford, plans by Russell & Gibson & Assocs., 1005 Farmington Ave., West Hartford. A & P Supermarket and shopping center, 3016 to 3062 Main St. $932,600. CD 5 11

▲ Conn., Waterbury—HOTEL—Waldert Corp., c/o Herbert L. Cohen, atty., 955 Main St., Bridgeport, plans by Kane & Fairchild, 714 Asylum Ave., Hartford. 2 story, brick fireproof motor hotel, W. Main St. $1,000,000. CD 4 1

▲ Del., Wilmington—SHOPPING CENTER—Magness Constr. Co., 2301 Silverside Rd., shopping center, Kirkwood Highway. Over $2,500,000. William Cornell, Sr., owner, engr.

▲ D. C., Wash.—HOTEL—Harvard Park Hotel, 2660 Connecticut Ave., N.W., plans by Leo S. Porter & Sons, Metropolitan Bank Bldg., hotel, restaurant, 4 level parking garage and service area, 24 ft. $1,000,000.

Idaho, Boise—HOSPITAL—Ada County Hospital Dist. No. 1 and Bannock, Inc., hospital, 60 beds, for radiology and pathology departments. $600,000. CD 8 29 58

Ill., Bloomington—BOWLING ALLEY AND RESTAURANT—Bloomington-Normal Bowling Lanes, Inc., Bloomington, bowling alley, restaurant and cocktail lounge, at jct. Rte. 9 and 66. $750,000.

Ill., Champaign—HOSPITAL—Mercy Hospital, Champaign, hospital addn., modernization. $500,000.

▲ Ill., Des Plaines—HOUSING—First Federal Homes, Inc., N. Milwaukee Ave., Chicago, plans by Christopher Chamales, 11 S. LaSalle St., Chicago, 100 houses, 480 suites, Mannheim Rd. near Prospect. $4,000,000.

▲ Ind., South Bend—LIBRARY—University of Notre Dame, plans by Ellerbe & Co., 333 Shiley St., St. Paul, Minn. library. $5,000,000. CD 3 4 58

▲ Iowa, Dubuque—INFIRMARY—Sisters of St. Francis, 401 Davis St., 4 story infirmary bldg. $1,250,000.

▲ Kan., Independence—HOSPITAL—Mercy Hospital, Sisters of Mercy, hospital. $1,300,000.

▲ Kan., Olathe—SHOPPING CENTER—Olathe Development Co., c/o William Kinney, plans by [illegible], Gee Abstract & Title Co., Olathe, 20 [illegible] shopping center, U.S. 50 and Santa Fe St. $2,500,000. Bids July or August.

Mass., Brockton—MOTEL—Perry and James Motor Co., Edgar H. Wood & Assocs., 1 Beacon St., Boston, 3 story Quincy motor lodge, Belmont and Valley Sts. $500,000. Bids Soon.

▲ N. J., Princeton—HOUSING—Princeton Housing Development Corp., Dudley Straus, pres., 20 Nassau St., dorm development, Cedar Lane, etc. $1,045,000.

▲ N. Y., Bronxville—HOSPITAL—Lawrence Hospital, Palmer Ave., plans by [illegible] & Assocs., 141 E. 44th St., New York, Zone 17, 6 story hospital addn. $2,000,000.

▲ N. Y., Buffalo—HOSPITAL—University of Buffalo, 1445 Main St., plans by Perkins & Will, 260 Delaware Ave., Buffalo, Zone 2, 8 story, 200 bed addn. $3,000,000. CD 4 15

▲ N. Y., Fresh Meadows—APARTMENT—New York Life Insurance Co., 51 Madison Ave., New York, Zone 10, plans by Wechsler, Work, [illegible] & Mitchell, 101 Park Ave., New York 17, N. Y., 21 story apartment, Grand Central Pkwy. $2,500,000.

▲ N. Y., New York—APARTMENT—[illegible] 120th Street, New York, Zone 10, plans by [illegible] Rosenthal & Rosenthal, 1 Madison Ave., New York, Zone 10, 20 story apartment, [illegible] $2,570,000.

▲ N. Y., New York—APARTMENT—[illegible] 5th Ave., New York, Zone 10, plans by [illegible] 1 Madison Ave., New York, Zone 10, 21 story apartment, [illegible] $5,000,000.

▲ N. Y., New York—APARTMENT—[illegible] 11th Ave., New York, Zone 19, plans by [illegible] 1 Madison Ave., New York, Zone 10, 21 story apartment, [illegible] $2,000,000.

▲ O., Cincinnati—[illegible] $1,000,000.

▲ Pa., Norristown—[illegible] $1,000,000.

▲ Pa., Phila.—[illegible] $1,250,000.

▲ Pa., Phila.—[illegible] $1,500,000.

▲ Pa., Phoenixville—[illegible] 000.

▲ S. C., Columbia—[illegible]

▲ Tenn., Knoxville—[illegible] & Assocs., 511 [illegible] 25 W. Norwood St., Greenville, S.C., [illegible] $1,500,000.

▲ Tex., Dallas—[illegible] Main St., [illegible] Square, Inc., 4532 [illegible]

Wagner & Co., prop., [illegible] 1008 Stonewall St., 3 story, 150,000 sq. ft. trade mart. $3,000,000. auto parking center and shop area paving. $92,500. 5206 Maple St.

▲ Tex., Dallas—HOSPITAL—St. Paul's Hospital, 5121 Bryan St., plans by Roscoe DeWitt, 2025 Cedar Springs Rd., hospital, Bryan and Hall Sts. $10,000,000. CD 1 2 58

▲ Tex., Fort Worth—SHOPPING CENTER, etc.—Ward Plaza, Inc., The Fair Bldg., plans by Hedrick & Stanley, 1200 T&P Bldg., 2 story, 175,000 sq. ft. concrete steel shopping center, service, [illegible] parking area, Riverside Dr. and Berry. $2,000,000.

▲ Tex., Houston—SHOPPING CENTER, etc.—Bayou Properties (Schumaker Interests), 3000 Hicks St., shopping center. $1,250,000. sanitary storm sewers. $110,000. water sys. $55,000. xway and auto center paving. $90,000. Westheimer and Hillcroft Rds.

▲ Tex., Houston—SHOPPING CENTER—Cole Creek Development Co., c/o Wilson, Morres, Crain & Anderson, [illegible] 4340 Grandstark St., structural steel reinforced shopping center. $1,250,000. sanitary storm sewer lines. $100,000. site earthwork, grading, filling, leveling. $56,000. area and auto center hard-pavement. $90,000. Cole Creek Manor Subdivision.

Tex., Houston—DWELLINGS—Dwight Inc., Dwight Lee Parker, 1809 Turnberry Circle, 20 dwellings, Marvin Estates. $550,000.

Tex., Houston—SUPERMARKET—J. M. H. Supermarket, 6204 Village St., plans by T. T. Weisz, designer of owner, supermarket, Spring Branch Area. 2550 block Dempster Rd. $500,000; supermarket W. Orem Dr., Pioneer Heights Subdivision. $500,000.

▲ Tex., Houston—RETAIL STORE—S. H. Kress & Co., 617 Main St., 8 story retail store remodeling. $1,500,000.

▲ Tex., Houston—DWELLINGS—LCG Development Co., 4251 Indigo St., or John R. Lester, pres., 8421 S. Rice St., 35 dwellings $429,500. 40 dwellings $460,225. 32 dwellings $410,750. 37 dwellings $439,800. 30 dwellings $407,150. 126 dwellings $1,415,000. Ash Acres Estates. Const. 1959-1960.

▲ Tex., San Antonio—SHOPPING CENTER—Mountain Properties, c/o Ginter Bldg., plans by Morgan & Mok & Jones, South Texas Bldg., 200,000 sq. ft. masonry shopping center, Grevers, Walters, Hildebrandt Sts. $2,500,000. CD 11 10

Utah, Midvale—HOME SUBDIVISION—Sam E. Sato, 2180 Pheasant Way, plans by Arthur E. Lee, North 365 W. between 80th and 83rd Sts. over $500,000.

Utah, South Ogden—BOWLING ALLEY—Washington [illegible] Blaine C. Gissmann Jr., atty., 1st [illegible] Bank Bldg., bowling alley, 440 S. Washington Blvd. $500,000.

▲ Wash., Union—HOTEL—W. M. Johnson, Alderbrook Inn, plans by P. G. Bell, 2715 Center St., Tacoma, resort hotel. $1,000,000.

▲ Ont., Dundas—SHOPPING CENTER—Lister Realty Ltd., 21 Queen St., plans by Venchiarutti & Venchiarutti, 1141 Avenue Ave., Toronto, shopping center, jct. of No. 2 and No. 8 Highways. $1,500,000.

Ont., London—CLUB HOUSE—London Hunt & Country Club, Richmond St. N., London Twp. near, plans by Watt & Tillmann, 1494 Richmond St., Box [illegible] club house. $500,000. M. M. D. [illegible] 131 Maple St., London, engrs. Bids April.

▲ Ont., London—HOSPITAL—Sisters of St. Joseph, [illegible] and [illegible] sts., plans by Watt & Tillmann, 1494 Richmond St., London, 3 story wing addn. and 4 story addn. $2,305,000.

▲ Ont., Toronto—APARTMENT—Terraview Development Ltd., 1110 Eglinton Ave. W. and Pt. Roth, 2 Redpath Ave., Ambrose D. Terraview

3 New International® Earthmovers

new CAPACITIES (24 yd. scrapers, 27 yd. wagon)

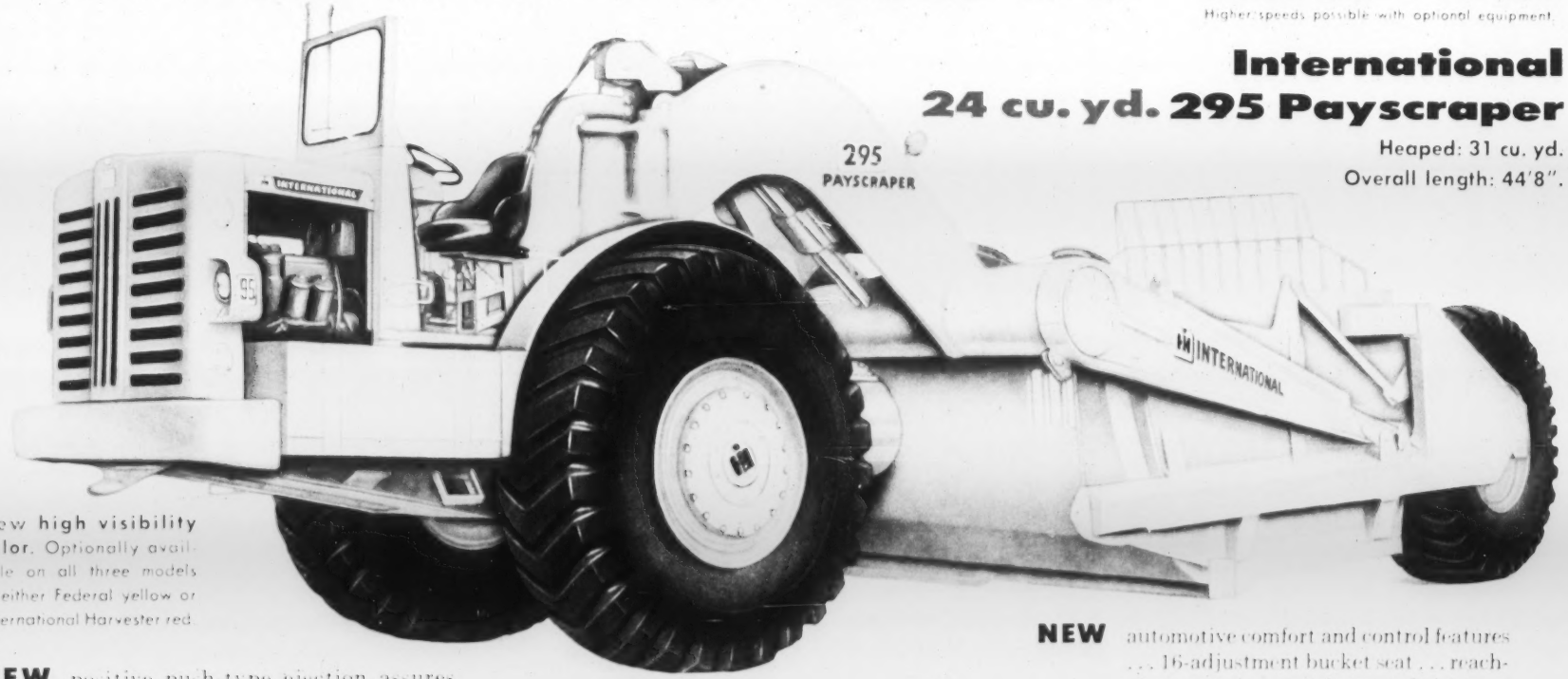
new POWER (375 hp)

new SPEEDS (to 29.1 mph)

Higher speeds possible with optional equipment.

International 24 cu. yd. 295 Payscraper

Heaped: 31 cu. yd.
Overall length: 44'8".



New high visibility color. Optionally available on all three models in either Federal yellow or International Harvester red.

NEW positive push-type ejection assures quick clean dumping of all materials.

NEW advanced lift frame construction with A-frame-type gooseneck that: 1) increases visibility; 2) distributes weight evenly along cross tube; and 3) protects sheaves of bowl lift system.

NEW full 90° turns with power steering.

NEW 375 hp DT-817 turbocharged 6-cylinder diesel engine. See page 4.

NEW cycle-shortening haul speeds to 26.2 mph plus unmatched maneuverability.

NEW exclusive tapered bowl. See next pages.

NEW high 98" apron opening. See pages 2-3.

NEW automotive comfort and control features . . . 16-adjustment bucket seat . . . reach-easy controls . . . unobstructed vision . . . air brakes . . . flush deck.

NEW Model 280 cable control unit . . . finger-tip control . . . fast acting . . . high capacity . . . simple adjustments . . . less maintenance.

See 3-axle models on inside pages...

27 CU. YD. International 495 Paywagon

Heaped: 40.5 cu. yd.
Payload: 40.5 tons.
Overall length: 50'4½".

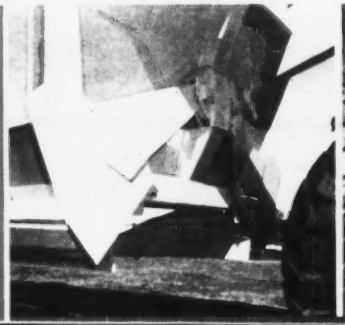
Here in the *27 cu. yd.* International 495 Paywagon is everything that's new and productively *different* in bottom dump design. New 375 hp engine for greater power *per struck yard than any comparable rig.* New higher side and rear end clearance to roll away from any dumped load. New power-opened clam-shell doors for positive controlled dumping. New wiper plates put 100% of each load on the fill. New automotive comfort and control features *that* let the operator produce more with less effort. New full 90° turning in either direction. New low design for haul road stability.

New exclusive power-opened clamshell doors afford positive controlled dumping. Operator spot dumps entire load, or windrows material in lifts from a few inches on up. Wiper plates shave all material from doors as they raise. Doors gravity close, eliminating complicated mechanism.

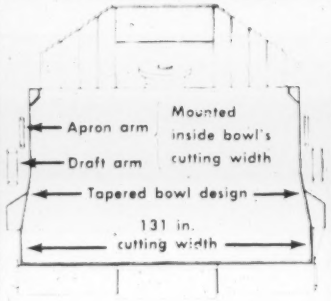
Unmatched 60" rear end dumping clearance lets rig pull fast from fill with no dangling doors dragging on dumped material. Open rear frame lets loader spillage fall through — prevents buildup of "free loading" material.

375 HP 495 prime mover gives both 495 Paywagon and 495 Payscraper more hp per struck yard with less gross weight per hp than any similar sized earth mover. Speeds to 29.1 mph. 10'8¼" wheel base. Full 180° non-stop turns can be made within 39'11¾".

NEW high speeds big capacities



fast dumping unmatched control



This new International 495 Payscraper boils a heaped load into a 24 cu. yd. bowl in less time than any other three-axle scraper in its class and hauls it at speeds up to 29.1 mph. The trailing unit, common to the 295 Payscraper, offers this unmatched combination of features that cut dirt costs: big 131-in. cutting width . . . tapered bowl permits efficient ejection of all materials with equal ease . . . positive forced ejection . . . improved lift frame construction . . . full 90° turns . . . more hp per struck yard than all competitive units . . . wheels and bowl leveling adjustment . . . advanced sheave bearing design . . . and custom designed cable control unit.

Exclusive tapered bowl design: It permits scraper and pusher to work inside cut for best traction, less wear on tires, and tracks. 2. causes dirt to boil toward center, reducing side spillage. 3. extra wide bowl bottom provides wider spread, speeds dirt breakaway and lets scraper work cuts against banks.

Positive forced ejection dumps all materials — even wet or frozen clay and gumbo — cleanly and quickly. Six large ball bearing mounted rollers center and guide ejector gate, have 240-hour lube intervals.

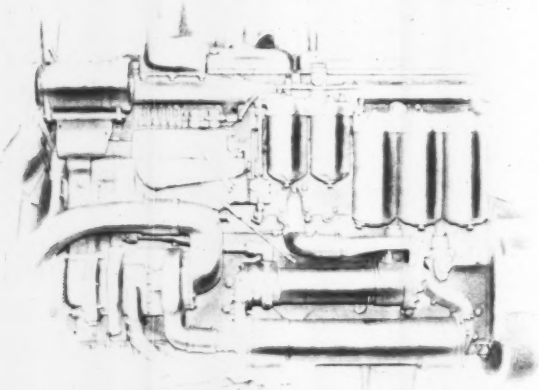
Gaping 98" apron opening plus no bowl cross member permits sure ejection of all materials. Apron opened by exclusive, rear-controlled mechanical linkage. Apron is synchronized with ejector for positive controlled spreading.

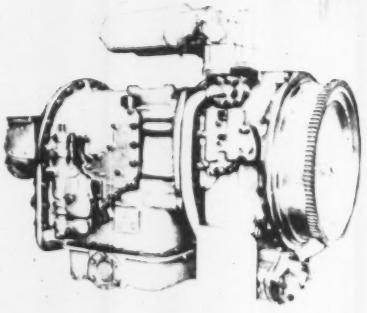
24 CU. YD. International 495 Payscraper

Heaped: 31 cu. yd.
Overall length: 50'6¼".

New Turbocharged International DT-817 powers all three giant earthmovers

- Develops 375 hp @ 2100 rpm
- Direct push-button, 24-volt starting
- Positive valve rotators — increase valve life
- Aluminum alloy pistons for fast heat dissipation
- Wet sleeve construction provides additional cooling
- Fully counterbalanced crankshaft for smooth engine performance
- Dual intake and exhaust valves for peak engine efficiency
- Twin plunger injection pump precision meters fuel
- Hang down type replaceable filters for maximum fuel and oil filtering efficiency
- Tri-metal crankshaft bearings for long trouble-free service





Both prime movers are available with 4-speed, planetary type torque converter power shift transmission. It automatically adjusts output torque and speed to fit load requirements. Torqmatic drive makes more power available over the entire range; applies power smoothly and continuously, resulting in less wheel slippage; maintains high tractive effort; and cuts the number of gear shifts per cycle, letting operator concentrate on loading and spreading operations.

A constant mesh 9-speed manual shift transmission is optionally available on both prime movers.

See your International Construction Equipment Distributor for complete information on these NEW International Earthmovers

International *Construction Equipment*

International Harvester Co. · 180 N. Michigan Ave., · Chicago 1, Ill.

A COMPLETE POWER PACKAGE: Crawler and Wheeler Tractors . . . Self-Propelled Scrapers and Bottom Dump Wagons . . . Crawler and Rubber-Tired Loaders . . . Off-Highway Haulers . . . Diesel and Carbureted Engines . . . Motor Trucks . . . Farm Tractors and Equipment

NEW ENGLAND

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
STREETS AND ROADS
May 19 Massachusetts May 22 Vermont

▲† Mass. Weymouth

BUILDINGS—BA

Me. Portland

Mass. Boston

R. I. Foster and Gloucester

Conn. Hartford

▲ Mass. Boston

HEAVY CONSTRUCTION—LB & CA

Cisterense-Piatelli Constr. Corp.
$855,225

▲ CONNECTICUT

Savin Brothers, Inc.
LA $1,958,629

LB

BUILDINGS—LB & CA

▲ Albertham Constr. Co., Inc.
MA Approx. $2,000,000

Frank Procaccino Jr.
$659,875

Nunzio Corsino
$895,000

▲ Hayes Constr. Co.
LA $1,019,580

MIDDLE ATLANTIC

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
BRIDGES
May 20, 27 New Jersey
STREETS AND ROADS
May 2, 29 Pennsylvania May 27 New Jersey
June 4 New York

BUILDINGS—BA

N. J. Camden

N. Y. Troy

▲† N. Y. Binghamton

▲ Pa. Woodville

▲ Md. Baltimore

HEAVY CONSTRUCTION—LB & CA

▲ Grove, Shepherd, Wilson & Kruge, Inc.
$7,500,000

Correction

▲ George Tripp, Inc.
$2,070,822

Poole & Kent
$529,062

Hunt & Perry Corp.
$533,862

BUILDINGS—LB & CA

▲ William L. Crow Constr. Co.
$20,000,000

▲ Donald Aranow & Assoc.
$5,000,000

▲ Birchwood Farms, Inc.
Separate Contracts $6,035,000

▲ Lakeside Building Co.
A $1,000,000

▲ Boardman-Smith Corp.
$1,000,000

▲ Carlstan Homes, Inc.
Separate Contracts $6,000,000

▲ Valleywood Estates
$1,200,000

Lafayette Park
$620,000

▲ William H. Houghton
$3,300,000

▲ Cascia & Weiss
$2,000,000

Ted Fundman
$500,000

Charles Haning
$600,000

Consolidated Eng. Co.
$728,900

▲† Arthur Venneri Co.
$4,370,000

SOUTH

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
STREETS AND ROADS
May 20 Louisiana

Miss. Pascagoula

HEAVY CONSTRUCTION—LB & CA

McMerkin Constr. Co.
A $620,900

Robert E. Lee Co.
Dixie Constr. Co.
$629,85

▲ GEORGIA

Blythe Bros. Co.
$3,574,187

$2,667,448

Oxford Constr. Co.
$745,291

G. H. Law Constr. Co.
$490,000

A. C. Samford, Inc.
$598,229

▲† Southern Constr. Co., Inc.
$1,300,165

▲ KENTUCKY

Struck Constr. Co.
LB $1,677,936

Fount Crow, Inc.
LB $203,17

Nally & Gibson
$198,292

BUILDINGS—LB & CA

G. L. Wilson Bldg. Co.
$611,000

▲ E. I. duPont de Nemours & Co.
$20,000,000

▲ Henry C. Beck & Co., Jr. and J. B. Hutchinson
$5,000,000

▲ Jehle Brothers, Inc.
A $2,000,000

R. M. Thompson Co.
A $690,000

▲† R. F. Ball Constr. Co., Inc.
$4,963,110

Lana Constr. Co.
$708,000

J. C. McClendon
$708,000

Otis W. Sharp & Son, Inc.
A $770,394

† Weir Constructors, Inc.
LB $704,000

MIDDLE WEST

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

May 26 Wisconsin June 2 Wisconsin & Minnesota

STREETS AND ROADS

May 26 Ohio, Wisconsin

▲ Ill., Chicago. BA. 5-21. Metropolitan Sanitary Dist. of Chicago, 100 E. Erie St. Battery of aeration tanks, North Side Sewage Treatment Works, Lawler, $4,000,000. Burton A. Schmidt, 200-E. Erie St., Chicago, engr. CD 1-14.

BUILDINGS—BA

Ill., Chicago. SCHOOL. BA. 5-25. Bd. Ed. c/ 228 N. La Salle St. remission. Frank Nikola Tell Elementary School, $580,000. John C. Christensen, 228 N. La Salle St., archt. CD 4-13-57.

▲ O., Cleveland. LIBRARY. BA. 6-16. Case Institute of Technology, University Circle, Zone 6, selected architect for addition, library, $1,500,000. Outhwaite, Reeb & Diaz, 1010 Euclid Ave., Zone 15, archts. CD 11-14-57.

▲ O., Cleveland. HOTEL. BA. 6-16. Case Institute of Technology, University Circle, Zone 6, selected architect for addition, parking bldg., $1,800,000. McGeorge Wright & Anker, 2116 Euclid Ave., Zone 14, engrs. CD 2-14-57.

HEAVY CONSTRUCTION—LB & CA

▲ OHIO. State Hy. Dept. Contract Bids opened 4-28. Oberer Constr. Co., 4124 Webster St., Dayton, LB $189,950, est. $210,100; 6 bidders, $211,159 to $252,715. Bids 1,982 SR 29-0.00 24-67, Montgomery-Darke-Preble Counties.

Shelly & Sands, Inc., Thorny Run, LB $685,802, est. $719,700; 5 bidders, Tate-Troy Run-Hueston Woods, 1,382 SR 732-0.24 F 421 S.

V. N. Holderman & Sons, Inc., 843 Fox and Pike Ave., Columbus, O., LB $1,458,561, est. $1,592,000; 11 bidders, Tate-Troy Run-Hueston Woods, 1,246 SR 732-0.24 F 421 S. Bids Apr. 21. CD 4-14-57.

R. G. Matteen Constr. Co., Little Richmond Rd., Dayton, LB $752,510, 15 bidders, water transfer tunnel, 1,382 SR 732-0.24 F 421 S. Tap to Ft. Ayer-Wright-Patterson Air Force Base, Henry & Williams Counties, engrs. Bids Apr. 21. CD 4-30-57.

▲ Collins & Hobbs, Inc., 3253 Tennessee Ave., Chattanooga, Tenn., LA $1,421,800. Brainerd HIGH SCHOOL, CHATTANOOGA, TENN. Chattanooga Bd. Ed., 413 E. 8th St., Chattanooga, Tenn. Johnson T. Frist, 421 Pioneer Bldg., Chattanooga, Tenn., archt. CD 2-28-58.

Prichard Lumber Co., 1431 Rt. 3, Cleveland, Tenn., LA $547,635. HOSPITAL, CLEVELAND, TENN. Bradley Co., Cleveland, Tenn. Bids Apr. 14. CD 5-1. under LB.

▲ W. F. Holt & Sons, 1619 Laurel St., Nashville, Tenn., LA $1,353,240. Henry HOSPITAL addn., NASHVILLE, TENN. St. Thomas Hospital, 2000 W. Wade Ave., Harwell & Clark, archts. Life & Casualty Tower, Nashville, Tenn. Bids Apr. 9, awarded Apr. 29. CD 4-3.

Columbia Constr. Co., 2108 Columbia St., Indianapolis, Ind., LB $686,219, extend Pendleton By-Pass, 4 mi. east of Pendleton to 4 mi. south of Pendleton, Madison & Hancock Counties, INDIANAPOLIS, IND. Sanitary Constr. Co., 421 N. Pennsylvania St., Indianapolis, Ind. Bids Apr. 29. CD 8-14-56.

▲ Hedge's Constr. Co., 5415 Rogers Ave., Chicago, Ill., LA $815,241, conc. fdns. & erect. 4 mile Expressway Central Rd., Arlington Heights Rd. to Northwest Highway, 117-1618, Arlington Heights, CHICAGO, ILL. Cook County, County Bldg., Chicago, Ill. Bids Mar. 31, awarded Apr. 28. CD 8-14-56.

Strandberg & Sons, 143 S. La Salle St., Chicago, Ill., LA $671,496, highway grade separation over Illinois Central R.R. at Arlington Heights Rd. & Northwest Highway, 117-1618, Arlington Heights, CHICAGO, ILL. Cook County, County Bldg., Chicago, Ill. Bids Mar. 31, awarded Apr. 28. CD 8-14-56.

▲ Gallagher Asphalt Co., 181 St. and Indiana Ave., Thornton, Ill., LB $297,455, b. conc. pvmt., 24ft. wide, 7in. thick, 2.2 mi. Halsted St. from 162nd St. to Dixie Highway, Cook County, County Bldg., Chicago 62, Ill. Bids Apr. 28. CD 4-22.

Rock Road Constr. Co., 4915 N. Rogers Ave., Chicago, Ill., LB $687,374, b. conc. resurf. 8.1 mi. North Western Ave., Chicago, Ill.

Standard Paving Co., 1 W. Washington St., Chicago, Ill., LB $422,617, 4 sec. 3954 Central Ave., Chicago, Ill.

Union Contg. & Engineering Co., 2045 W. 43 St., Chicago, Ill., LB $118,668, 0.61-1.617 2 lane ext. resurf. Crawford Ave., Glenview to Wilmette Rd., Wilmette, Chicago, Ill.)

MICHIGAN. State Hy. Dept., Mason Bldg., Lansing. C. A. Hull, Inc., Birmingham, Mich., and Walter Toebe & Co., 412 W. Saginaw, Lansing, Mich., CA $610,351, 6 str. bridges, interchange at M-13 and Main Rd. and grade separation at Dunckel, Nichols Sevener and Eaton Rd., Genesee Co. Bids Mar. 25. CD 4-2.

▲ MICHIGAN. State Hy. Dept., Mason Bldg., Lansing, Mich.—Frank J. Knight, 23845 Sherwood Court, Center Line, Mich., CA $826,254, grading, drainage structures, surf. on ramps and approaches for interchange at Merriman Rd. and Detroit Industrial Expressway, Wayne Co., CD 4-6, under LB.

Mich., L. W. Edison, 4134 Drive S.E., Grand Rapids, Mich., CA $609,144, 1 mi. dual 36 ft. pavement, ramps, service roads, lighting and electrical facilities from 28th St. in Wyoming north to Burton St. in Grand Rapids, Kent Co., CD 5-2, under LB.

BUILDINGS—LB & CA

▲ Tollis Building Co., 20273 Harvard Ave., Warrensville Heights, O., Owner Builds, $4,000,000. RESIDENTIAL DEVELOPMENT, Falls Lane Estates, BROADVIEW HEIGHTS, O. Anthony O. Zaccagnini, 1322 E. 185 St., Cleveland 22, O., archt.

▲ Edward Rose, Inc., 2500 E. Dorothy Lane, Dayton, O., Owner Builds, $1,250,000+, 63 HOMES, Five Pike, Northgate subdivision, DAYTON, O.

▲ Robert W. Shope, 9715 Cleveland Cantor Rd., Streetsboro, O., Owner Builds, $1,000,000, 93 HOMES, west side Rte. 43, north of Ohio Turnpike, Valley Stores plat, STREETSBORO, O.

▲ Peterson Constr. Co., Wapakoneta, O., LB $1,093,672, 11 bidders, general contract HIGH SCHOOL, TIFFIN, O. Bd. Ed., Thos. D. Redman, Gillett & Richards, Inc., Madison Ave., Toledo 2, O., archts. CD 5-12-58.

▲ Terminal Constr. Co., Box 176, Ward Road, Natrona Heights, Pa., LB $8,795,750, (9 bidders), 536 ft. Capehart housing, Clinton County A.F.B., Exit 10, PA Turnpike, e26-69-12, WILMINGTON, O. Procurement Officer, Clinton County A.F. Force Base, Wilmington, O. Bids Apr. 13. CD 4-9.

▲ Inland Constr. Co., 4342 Jefferson St., Morton Grove, Ill., CA $2,033,000, BOWLING ALLEY, North Lawndale, CHICAGO, ILL. Holiday Bowl, Inc., Lee E. Arneson, 100 W. Monroe St., Chicago, Ill. Awarded Apr. 16. CD 4-6.

LaGiglia & Son, 1959 S. Kostner Ave., Chicago, Ill., CA $700,000, 80 x 186 ft., St. Anthony's CHURCH, 202 E. Annunciation Ave., CHICAGO, ILL. Catholic Bishop of Chicago, 209 N. Wabash Ave., Chicago, Ill. Awarded Apr. 10. CD 12-13-56.

▲† A. Z. Simina & Sons, 6275 Schaefer Rd., Dearborn, Mich., LB, Bids 1, $1,933,000, Alternate (A) add $25,000, Alternate (B) add $15,000, 1 and 2 sty. addns. (general work) to veterans Administration hospital, DEARBORN, MICH. Veterans Adm., Washington, D.C. Bids Apr. 28. CD 3-9.

REDA SUPPLIES *21,000 GALLONS* OF WATER PER HOUR

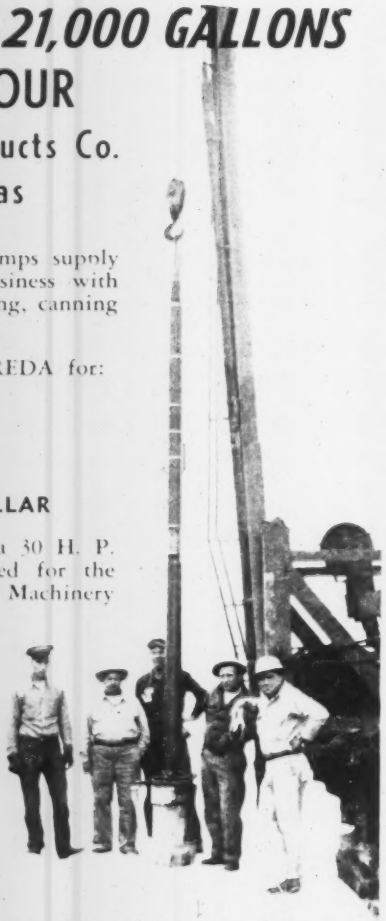
for Kimbell Food Products Co. Fort Worth, Texas

Three Reda Submergible Pumps supply this well known Ft. Worth business with plenty of water for food processing, canning and bottling operations.

The Kimbell people chose REDA for:

- **Dependable water supply**
- **Low Maintenance Cost**
- **Low Installation Cost**
- **Low Operating Cost**
- **MORE WATER PER DOLLAR**

The installation pictured is a 30 H. P. Reda unit, one of three installed for the Kimbell Company by the Well Machinery & Supply Co. of Ft. Worth.



INSTALLATION DATA

PUMPING DEPTH: 452 ft. (water pumped to tower 110 ft. high)

CASING: 10 inch steel casing

POWER REQUIRED: 440 volts, 3 ph., 60 cycle

MAXIMUM WATER REQUIREMENTS: 210,000 gallons per day

WATER SUPPLIED BY REDA: 21,000 gallons per hour

PUMPS INSTALLED: 30 H. P. Reda unit supplying 150 g.p.m.
25 H. P. Reda unit supplying 100 g.p.m.
20 H. P. Reda unit supplying 100 g.p.m.

Reda Submergible Pumps are manufactured in a complete range of sizes from ½ to over 300 H. P., with capacities from 5 to over 1000 gallons per minute, from depths as great as 10,000 feet.

Contact Reda TODAY for Submergible pumps to meet your requirements!

SIGN OF QUALITY SUBMERGIBLE REDA PUMPS

REDA PUMP COMPANY

BARTLESVILLE, OKLAHOMA

Manufacturers of submergible motors and pumps for over 35 years — for oil, brine and water wells, gasoline and jet fuel

WEST OF MISSISSIPPI

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

May 22 Minnesota May 28 Kansas
June 2 South Dakota

STREETS AND ROADS

May 22 Minnesota May 28 Kansas
June 2 South Dakota

Minn St Louis Park—BA $ 22 City combined project, Section A and Section B, road-mixed bit. surf., hot bituminous paving, concrete curb and gutter, $400,000 R. O. Ford, city engr.

+ Neb Fort Crook—G M ASSEMBLY FACILITY etc—BA est. $700,000 Eng 17th Division St Omaha Zone 2 G.M. assembly fac. tx and testing fac. sub. fac. to ammo. Air Force Base ENG-25-(part)59-12-64 $500,000-$700,000 CD 9 22.

▲+ Kan Topeka—OPERATIONS BLDGS—BA Oh About 6 m—U. S. Eng 2800 Federal Office Bldg Kansas City, Mo launch operations bldgs Complex A, B & C near Forbes Air Force Base ENG-24-028-59-64 CD 4 2

† Texas—BA About 6 to 10—U. S. Eng Box 1229 Galveston general rehabilitation work, Brazos River Flood-gates on G.W.W. vicinity Freeport ENG-41-243-64-61 $150,000-$250,000 CD 9 24

BUILDINGS—BA

Mo Kansas City—SCHOOL BA 5 21—Bd Educ 800 [illegible] $725,000 Harris & Schumacher, Scarritt Bldg Kansas City, Mo archts CD 5 12

▲ Minn Minneapolis—SCHOOL etc BA 5 22 Immaculate Conception Academy 1301 Linden Ave 1 story brick [illegible] $2,000,000 Plans dr [illegible] & Associates Builders Bldg Pa [illegible] CD 10 27

▲† Ark Helena—POST OFFICE and COURT HOUSE—BA [illegible] Bldgs Service General Services Admin Region 7 Federal Center 1114 Commerce St Dallas 2, Tex Chester Peterson, Regional Commissioner GSA Region 7 Federal Center 1114 Commerce St Dallas 2, Tex JOAE Plans, details $70 CD 5 26

▲ Tex Houston—HOSPITAL—BA est $7,000,000 Texas Research Hospital $1,000,000 Bldg addition $60 Pierce & Pierce, 2200 Main St Houston 2 Pierce & Pierce, 2200 Main St Houston 2 Pierce & Pierce, 2200 Main St Houston 2 Pinedale St engr C 12 [illegible]

▲ Tex Port Arthur—SHOPPING CENTER etc—BA [illegible] Shopping Center $1,500,000 [illegible] Shopping Center $125,000 Kyle Jones & Associates Beaumont, Tex archts CD 1 24

BUILDINGS—SLC

▲ Tex Austin—SHOPPING CENTER etc—BA [illegible] Shopping Center B-2 Corp Nat'l Bank Bldg Austin, Tex $1,750,000 Lyle Barthalow & Associates Bldg Austin, Tex archts CD 5 19

[illegible] Tex [illegible] Rudolph R. Knox & Associates 1317 Austin St Houston, Tex archts CD 5 27

[illegible] Mass [illegible] & Associates

HEAVY CONSTRUCTION—LB & CA

Kansas-Anderson, Inc 401 E Jefferson St South Bend, Ind CA $679,278 [illegible] Bldg [illegible] & control tow. Bids [illegible] Rochester Municipal Airport ROCHESTER, MINN [illegible] Hall Rochester, Minn Bids Apr 15 C 21 [illegible] LB

▲ NORTH DAKOTA—State Hy Com Bismarck, N D [illegible] Schaltz & Lindsay Constr Co 3201 Broadway N Fargo, N D $1,050,937 [illegible] Kenneth Hulstrand Enterprises N D LB $629,937 [illegible] Norgaard & Hilling Williston, N D Frank E. Olson & Sons Fargo, N D & John J. Mayo & Son Mayo & Son Fargo, N D $876,094 [illegible] Tinnerbo Constr Co Inc 2604 E Ave S Fargo, N D $432,863 [illegible] Construction Industries Inc [illegible] $538,000 [illegible]

▲† Independent Contractors & Engineers [illegible] Ariz [illegible] CA $6,362,384 [illegible]

+ U. S. Eng Box 61 Tulsa, Okla [illegible] Dam has been opened May 20 power plant addn Tulsa Fwy [illegible] 59-64 OKLAHOMA CITY, OKLA Over $500,000 CD 4 19

▲+ Hoak Constr Co [illegible] 64 St West Des Moines, Iowa LB $1,513,368 est $1,616,311 115 kv trans mission line Spec DC 5149 WYOMING Bureau of Reclamation Dist Interior Casper, Wyo Bids May 23 CD 5223

▲ TEXAS—State Hy Comm Austin N. Adams & T. L. James & Co Box [illegible] Kaufman, Tex CA $1,899,290 [illegible] 4 23 [illegible] LB

D. J. Eickhof & Sons Inc Box 543 Crookston, Minn CA $550,000 water plant improv GLENVILLE, MINN City Hall Glenville, Minn Bids Apr 22 C 22 27 67

BUILDINGS—LB & CA

▲ M. Roth [illegible] White Bear Ave St Paul, Minn CA $2,000,000 80,000 sq ft SHOPPING CENTER [illegible] BROOKLYN CENTER, MINN Garden City, Inc development Co [illegible] 100 Osseo Rd Brooklyn Center, Minn [illegible] bidders, general contract shopmaster Hall, Dixon, [illegible] 42 Sherburne Ave St Paul, Minn Bids Apr 21 [illegible]

▲† U. S. Eng [illegible] Federal Office Bldg Kansas City, Mo [illegible] Apr 21 [illegible] Air Force Base, Mo [illegible] ENG-24-028-59-64 FORT LEAVENWORTH, KANSAS CA $10,783,900 est $10,000,000 Nov Bids May 7 [illegible] ENG-24-028-59-61 Correction [illegible] 28 [illegible] A

▲ Sharp Bros Contg Co [illegible] 19th St Kansas City, Kan LB $1,356,124 [illegible] COMMUNITY CENTER [illegible] LITTLE THEATRE [illegible] GYMNASIUM [illegible] SOCIAL HALL [illegible] swimming pool KANSAS CITY, MO Jewish Community Center [illegible] Linwood Blvd Kansas City, Mo Bids Apr 24 CD 4 26

George H. Burden & Co. Inc [illegible] S and McLeans Sts [illegible] Ariz LB $561,963 (4 bidders) [illegible] 24,000 sq ft OFFICE [illegible] and Spring Sts LITTLE

"RILCO TRUSSES
FELL TOGETHER
LIKE MACHINED PARTS"

Rilco Monocord trusses span 122'11", spaced 20' o.c. Building is 140' x 350'

"The Rilco laminated members we used at Clothier Hall made construction very simple. They fell together almost like machined parts. We were able to assemble and *erect the entire building in one week* with a crew of eight men. We wish every material item would come through as well engineered and fabricated as these Rilco members," reports Mr. V. Ranieri, Ranieri Construction Company.

Large buildings (Clothier indoor riding hall covers 1½ acres) or small buildings—all go up fast with Rilco laminated members because components fit, are factory fabricated for fast assembly, arrive at the jobsite precut and drilled for connection hardware furnished. Contractors report successful results on their very first job.

For more information about how Rilco laminated members can help you bid on and get jobs, finish them on time and make a profit write your nearest Rilco office.

RILCO
makes wonders with wood

RILCO LAMINATED PRODUCTS, INC.
W801 First National Bank Bldg. Saint Paul 1, Minn.

Clothier Hall
Valley Forge Military Academy
Wayne, Pennsylvania
Architect: Harold G. Wilson
Ardmore, Pennsylvania
Contractor: Ranieri Construction Company
Chester, Pennsylvania

ROCK, ARK. Plank: Federal Savings & Loan Assoc., Little Rock, Ark.; Wittenberg, Delony & Davidson, 510 Center St., Little Rock, Ark.; archts. Bids Apr. 24.

▲† Philip Yosem, 1500 Lincoln Blvd., Venice, Calif. LB $3,365,000, 216 unit Capehart HOUSING, Hurlburt Air Force Base; START, Crook, Neb.; Offutt Air Force Base; Offutt Air Force Base Office, Offutt Air Force Base, Omaha, Neb. Bids Apr. 14. CD 3-26.

Gilmore Constr. Co., 2202 N. 27th St., Omaha, Neb. CA $662,933, incl. $750,000 25 bidders; JUNIOR-SENIOR HIGH SCHOOL, MILLARD, NEB.; Millard, Neb. Bids Apr. 16. CD 3-25.

Construction Industries, Box 672, Salina, Kan. CA $760,250, general contract, HIGH SCHOOL, HILLCREST ADDITION, Salina High School Dist. No. 305, Salina, Kan. Bids Mar. 25. CD 3-24. Under LB.

Flowood Co., Jackson, Miss.; Lewis Engrg., $525,000, rail production PLANT, CARTHAGE, TEX. CD 5-2.

▲ J. E. Simkins, 1209 Henderson Rd., Fort Worth, Tex. LB $1,500,000, Hilton, INN, 2 swimming pools, airport, 18 PA, 174 st. rms., Hilton Hotels Corp., 277 Park Ave., New York 17, N. Y.; Kitchings & Smith, Bids 2 mi. S. on 3811 Long Beach Blvd., Long Beach, Calif.; archts.

Dauphi, Inc., Dauphi Lee Plaza, Houston, Tex.; Home Bldg., $550,000, HOUSINGS, Marilyn Estates, HOUSTON, TEX.

▲ Hensel-Phelps Constr. Co., Greeley, Colo. LB $674,644, general contract, shop, office, 21x222 ft., 40x156 ft. PLANT, FACILITY, CO, General Parking Plant, P.O. Denver Office, 5000 Clarkson, Greeley, Colo. Bids Apr. 10. CD 4-14.

Natkin & Co., 2201 S. Delaware, Denver, Colo. LB $455,555, mechanical work, parking plant, Greeley, Colo.)

FAR WEST

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
STREETS AND ROADS
May 29 Arizona June 3, 4 California

▲ Calif., Sacramento, BA 5-26, Sacramento Municipal Utility Dist., Eng. Dept., 6201 S St., Sacramento 17, Powerhouse, Hybrid-Penstock and Appurtenant Works, Upper American River Proj., Bid Bond $2,000,000. Plans deposit $[illegible] CD 3-18.

▲† Oregon and Washington, BA 5-27, Bonneville Power Administration, Box 3621, Portland 8, Ore., Celilo-Sylvania 230-kv transmission line, Wasco, Sherman, Gilliam, Morrow, Umatilla, John Day, Dalles, Klickitat, Skamania, Clark, Cowlitz, Lewis, Thurston, Mason, Pierce, King, Snohomish, Whatcom, Skagit, Island, San Juan, Jefferson, Clallam, Kitsap counties, Ore., Wash., 287 mi., 230-kv, 1 circuit, 2 conductors per phase, 1 overhead ground wire, 1 fiber optics cable, 1 microwave tower, 1 repeater station, 1 substation, 1 switching station, 1 telephone line, 1 telephone repeater station, 1 telephone switching station, 1 telephone terminal station, 1 telephone toll station, 1 telephone trunk line, 1 telephone trunk repeater station, 1 telephone trunk switching station, 1 telephone trunk terminal station, 1 telephone trunk toll station, 1 telephone trunk toll terminal station, 1 telephone trunk toll trunk line, 1 telephone trunk toll trunk repeater station, 1 telephone trunk toll trunk 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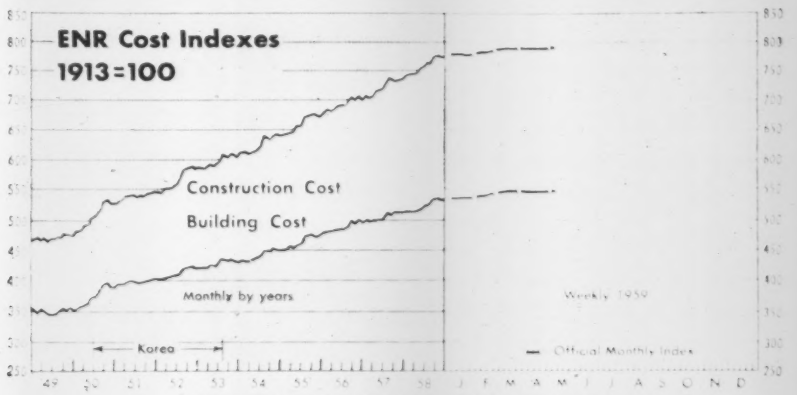
Construction Scoreboard

CONTRACTS ...



CURRENT COST INDEXES

ENR INDEXES (1913 = 100), 20-cities average	Week of May 7 1959	% Change from Apr. 9 1959	% Change from May 8 1958
Construction Cost	790.67	+0.6	+4.7
Building Cost	545.16	+0.5	+4.9

To convert above indexes to 1949 = 100: Divide Construction Cost by 2.080; Building Cost by 1.850.
To convert above indexes to 1926 = 100: Divide Construction Cost by 1.720; Building Cost by 1.518.

AMOUNT OF CONTRACTS LET

By Ownership	This Week millions	Cum. 20 wks 1959	Chge '58-'59 %
All Heavy Constr.	115.6	$7,323.4	+9
PRIVATE	190.4	5,482.7	+11
PUBLIC	225.2	3,840.7	+7
State & Municipal	168.2	2,736.1	+2
Federal	57.0	1,104.6	+41
By Type of Work			
PUBLIC			
Waterworks	12.4	164.4	+50
Sewerage	12.4	233.3	+11
Bridges*	13.6	226.0	+15
Highways	70.6	1,110.1	+1
Earthwork, Waterways	17.5	308.9	−2
Buildings, Excl. Housing	47.8	966.6	+4
Housing	17.7	255.6	−32
Unclassified	33.3	575.8	+62
PRIVATE			
Buildings			
Mass Housing	85.2	1,528.4	+12
Commercial	37.3	847.4	+1
Industrial	59.0	952.0	+23
Unclassified	8.8	154.9	−11

*Includes private bridges

NOTE: Minimum size projects included are: Waterworks and waterways, $53,000; other public works, $88,000; industrial buildings, $110,000; other buildings, $400,000.

CAPITAL . . .

New Capital For Construction	Week of May 7 millions	Cum. 19 wks 1959	Chge '58-'59 %
Corporate Securities	$ 49.4	$1,341.8	−40
State and Municipal:			
All Except Housing	96.7	2,557.4	−5
Housing		30.6	+51
Federal Loans	6.5	54.6	−23
Federal Aid			
Total Nonfederal	$152.6	$3,984.2	−20
Federal Appropriations:			
Projects in U. S.			−100
Outside U. S.			
Total New Capital	$152.6	$3,984.2	−29

CONTRACTS AWARDED

	1959 Apr. millions	1959 4-Mos. millions	% Change from 1958 Apr.	% Change from 1958 4-Mos.
Total U. S. ENR reported	$1,904.7	$6,504.5	+20	+20
Private	841.4	3,114.5	+3	+21
Public	1,063.2	3,390.0	+38	+19
State and Municipal	716.1	2,389.2	+22	+6
Federal	347.1	1,000.8	+91	+65
ENR Volume Index, 1913 = 100	532	513	−9	−7

NEW CONSTRUCTION CAPITAL

Total U. S.	$1,319.7	$3,831.6	+23	−23
State and Municipal Bond Sales	846.4	2,491.3	+107	+5
Corporate Security Sales	153.7	1,292.4	−7	−34
Federal Loans, Aid (nonfederal work)	19.5	48.0	+39	−32
Federal Appropriations (federal work)	0	0	−100	−100

MATERIALS SHIPMENTS

Unit	Jan., Feb., Mar.	1959	Cum. No. of Mos.	Percent Change from Year Ago Mo.	Cum.
Portland Cement, Bur Mines — thous bbls	23,911	M	52,118.3	+32	+24
Concrete Paving Awards, PCA — thous sq yd	7,255	M	22,975.3	*1	−31
Fabricated Structural Steel — thous tons	260	M	701.3	+23	+25
Bookings, AISC — thous tons	255	M	785.3	+30	+44
Reinforcing Bars, Net, AISI — thous tons	217	M	492.3	+54	+35
Lumber, NLMA — mil fbm	2,655		5,296	+15	+11
Orders — mil fbm	2,706		5,191	+20	+11
Production — mil fbm	2,648	F	5,219.2	+11	+8
Clay Products, Bureau of Census					
Brick, Unglazed, Common, Face — mil bri	388.6	F	753.7.2	+11	+21
Vitrified Clay Sewer Pipe — thous tons	99.8	F	201.2.2	+38	+16
Structural Tile, Unglazed — thous tons	34.6	F	72.9.2	+13	+7
Asphalt Products, Bureau of Census					
Asphalt Roofing — thous sales sqs	3,365.1	F	6,063.1.2	+34	+11
Asphalt Siding — thous sales sqs	66.6	F	121.0.2	+23	+1
Aluminum, Wrought, Net, Bur Census					
Sheet and Plate (non-heat treatable) — mil lbs	83.6	F	169.4.2	+28	+29
Wire and Cable — mil lbs	21.7	F	48.2(2)	+6	+14
Extruded Shapes (soft alloys) — mil lbs	58.0	F	117.2.2	+29	+25

EMPLOYMENT AND FAILURES

Contract Const Employment, BLS — thous	2,420	M	2,338.3 **	+1	+2
Contractor Failures, Dun & Bradstreet					
Number	185	M	547.3	−8	−3
Liabilities — thous	$11,589	M	$26,774.3	−3	−12

**Average per month

$100,000-Plus: Record Number Hit

- **Surge in heavy construction contracts pushed 10,052 contractors over the $100,000 mark in new business.**
- **Largest percentage gain came in companies doing $500,000 or more.**

The number of contractors taking on $100,000 or more of new business annually jumped to a new record in 1958—largely as a result of the rebound in heavy construction contract awards.

Last year, 10,052 contractors enjoyed at least $100,000 of new business. That's 818, or 9%, more than in 1957, the previous all-time high year. The $100,000-plus companies grabbed 20,071 heavy construction projects costing $14.3 billion. These figures are based on ENR's analysis of its contract award reports.

The $14.3 billion in new business signed up by contractors doing $100,000 or more in 1958 contracts accounts for 75% of total contract volume reported by ENR for that year. The balance represents business of companies doing less than $100,000 and projects handled by "owner-builders." The owner-builders account for most of this balance, consisting mainly of mass housing projects built with own forces, a small volume of commercial and industrial building, and private "unclassified" construction. The latter consists mostly of telephone, telegraph and pipe lines.

The 1958 increase was only slightly below the increase registered in the boom year of 1956, and it represents a 96% boost over the number of contractors who pulled in $100,000 in 1949.

The nine-year rise in contractors, however, is much less than the 135% jump in total heavy construction contracts registered during the same period.

This disportionate increase between construction contractors and new business available shows that contractor capacity is much higher today than in 1949. Reasons: Better management, faster construction methods and bigger investment in much more productive construction equipment.

In 1958, 4,447 contractors had new business between $100,000 and $500,000. This is only a 4% increase over the number in the same group in 1949. But the number of construction companies doing more than $500,000 in 1958 jumped to 5,605, 170% above the 1949 total.

• **Growth group**—Nearly all of the increase in contractors doing $100,000 or more came among companies handling heavy construction other than building. Their number rose by 760 last year (13.5%) to a record of 6,388. In contrast, building contractors in this bracket of award volume increased by only 58 companies, to 3,664. This is only a 1.6% rise. It's also a new high, but tops the 1956 record by only two contractors.

More contractors handled each major type of other-than-building work in 1958 than in 1957. Work takes in waterworks, sewerage, bridges, highways, earthwork, dams, waterways and airports. Biggest increases showed in highways, bridges and airports, where the number of contractors signing up new business rose from 16% to 39%. The increase in the number of companies taking on bridges occurred in the face of a 12% decline in total value of awards. The average bridge contract was smaller last year than in 1957, and the number of contracts was up 19%.

• **Building breakdown**—ENR's analysis of contractors' new business in 1958 for the first time shows the number of contractors taking on different types of building, such as mass housing, schools, office buildings, stores and shopping

How 10,052 Contractors Cut a $14.3 Billion Melon

Each took on $100,000 or more new business in '58

Type of Work	Number of Contractors 1958	Number of Contractors % Chg. fr '57	Number of Projects 1958	Number of Projects % Chg. fr '57	Contract Value (millions) 1958	Contract Value (millions) % Chg. fr '57
TOTAL—ALL TYPES	10,052	+ 9	20,071	+11	$14,312	+ 5
TOTAL—OTHER THAN BUILDING	6,388	+14	14,188	+18	7,437	+18
Waterworks	587	+ 1	777	−14	276	−19
Sewerage	1,136	+13	1,496	+11	551	+ 7
Bridges	1,122	+22	1,562	+19	638	−12
Highways and streets	3,151	+16	7,105	+21	3,411	+26
Earthwork & waterways	685	+ 6	828	+ 6	957	+18
Airports	1,044	+39	1,371	+57	946	+49
Unclassified	1,022	+13	1,049	+ 8	658	0
Federal (included above)	1,637	+33	2,176	+39	1,518	+14
TOTAL—BUILDING	3,664	+ 2	5,883	− 2	6,875	− 6
Industrial	1,050	−15	1,338	−24	1,596	−41
Mass housing, commercial, public	3,057	+ 6	4,545	+ 7	5,279	+14
Housing	514	*	1,062	*	1,624	*
Schools	1,143	*	1,558	*	1,305	*
Offices, private	228	*	290	*	640	*
Offices, public	116	*	127	*	221	*
Shopping centers & stores	192	*	248	*	320	*
Public industrial, military and atomic energy	353	*	432	*	391	*
Other building: private	460	*	525	*	459	*
Other building: public	272	*	303	*	319	*
Federal (included above)	478	+176	492	+142	861	+147

*Breakdown not made in previous years

ENR Data

It in '58

centers. In previous years, the breakdown was available only between industrial and other building. Comparisons with years prior to 1958 in these categories therefore are not available.

More contractors doing $100,000 and up in 1958 took on school projects than any other type of building except housing. In fact, the 1,143 companies in school building was second in number only to the 3,057 housing contractors.

Next largest group of building contracts was industrial—1,050 companies getting 1,338 contracts. This was 15% less than the number of contractors obtaining industrial building contracts in 1957. The 1958 total is 25% below the record count in 1956, the boom year for industrial building contract awards. Although the number of contractors with new industrial building contracts was smaller in 1958 than in 1957, the decline was not as great as the drops in number of awards and total contract value. Number of contracts declined 24% and contract value plunged 41%.

The number of companies taking on mass housing projects last year was second highest of any group, but the dollar volume of mass housing awards was tops in the building field.

In 1958, ENR screened out those mass housing projects and buildings other than industrial having a contract value under $344,000. Industrial building contracts of less than $93,000 were also eliminated. But on January 1, this year, the mass housing and other than-building minimum was raised to $400,000. The industrial building minimum was increased to $110,000. The minimums were raised to reflect the increase in costs since the previous minimums went into effect in January 1955.

Private office building contracts were obtained by 228 building contractors. Their 290 projects were valued at $640 million. Public office buildings contracts were awarded to 116 contractors, giving them a total of 127 projects having a contract value of $221 million.

Store and shopping center contracts reported by ENR went to 192 contractors in 1958. They accounted for 248 awards with a value of $320 million.

• **Big firms gain most**—Contractors doing $500,000 or more in 1958 new business increased much more than the $100,000 to $500,000 group. The latter increased only 4%, to a total of 4,447. But the $500,000 to $1 million group rose by 16%, to 2,046. Firms with $1 million or more increased 12%, to 3,559. This last is a spectacular rise.

The "million-dollar" companies accounted for 35% of the 10,052 contractors garnering $100,000 or more in new 1958 business. As recently as 1954, the million-dollar contractors represented only 29% of companies in the $100,000 and up classification. But in the four years since then, million dollar companies jumped in number by 57%. This compares with only a 16.5% increase in contractors doing between $100,000 and $1 million annually.

The booming volume of new contracts for highways, bridges, airports and sewerage accounted for the growth among large contractors. Those doing $1 million or more in other than-buildings increased by 20% last year, to 2,053, nearly double the 1954 count.

In contrast, building contractors doing at least $1 million a year rose only 3% in 1958. While the 1958 total of 1,506 is a new record, it represents an increase of only 26% above 1954, compared to the increase of almost 100% in the other than building group during the same period.

Contractor New Business in '58 by Company Size

	Firms with $1,000,000 or More in Construction Contracts						Firms with $500,000 $1,000,000 in Construction Contracts						Firms with $100,000 $500,000 in Construction Contracts					
	Number of Contractors		Number of Projects		Contract Value (millions)		Number of Contractors		Number of Projects		Contract Value (millions)		Number of Contractors		Number of Projects		Contract value (millions)	
		% Chg.		% Chg.		% Chg.		% Chg.		% Chg.		% Chg.		% Chg.		% Chg.		% Chg.
Type of Work	1958	fr '57	1958	fr '57	1958	fr '57	1958	fr '57	1958	fr '57	1958	fr '57	1958	fr '57	1958	fr '57	1958	fr '57
TOTAL ALL TYPES	3,559	+12	10,976	+18	$11,915	+ 5	2,046	+16	3,767	+14	$1,322	+11	4,447	+ 4	5,328	— 2	$1,075	— 1
TOTAL OTHER THAN BUILDING	2,053	+20	7,530	+31	6,013	+21	1,174	+22	2,655	+17	735	+15	3,161	+ 7	4,003	1	688	+ 1
Waterworks	190	—14	323	—14	197	—22	109	— 3	155	— 3	35	— 5	288	+15	299	—19	44	—19
Sewerage	377	+18	595	+23	358	+ 8	202	+23	310	+17	91	+18	557	+ 8	591	— 2	102	— 4
Bridges	653	+51	894	+31	504	—16	169	0	291	+11	72	+ 4	300	— 5	377	+ 3	60	— 3
Highways and streets	1,289	+28	4,209	+37	2,789	+31	631	+20	1,363	+17	357	+17	1,231	+ 5	1,533	— 6	265	— 1
Earthwork & waterways	350	+ 8	417	+ 8	877	+20	102	+28	141	+41	39	+18	233	— 5	270	— 8	41	— 9
Airports	473	+29	719	+59	785	+52	165	+43	213	+47	78	+39	406	+39	439	+58	84	+53
Unclassified	379	+20	373	+17	503	+21	147	+16	182	+ 6	63	+ 3	496	+ 8	494	+ 2	92	— 1
Federal (included above)	666	+12	1,047	+31	1,260	+10	248	+36	319	+29	111	+28	723	+61	810	+57	147	+53
TOTAL BUILDING	1,506	+ 3	3,446	— 3	5,902	— 8	872	+ 8	1,112	+ 6	587	+ 7	1,286	— 4	1,325	— 5	387	— 4
Industrial	446	—17	676	—30	1,445	—43	174	— 4	205	— 8	68	—18	430	—17	457	—20	84	—21
Mass housing, commercial and public	1,385	+ 4	2,770	+ 7	4,457	+15	791	+12	907	+ 9	519	+11	881	+ 5	868	+ 4	303	+ 2
Housing	126	*	668	*	1,427	*	195	*	206	*	126	*	193	*	188	*	71	*
Schools	565	*	959	*	1,003	*	309	*	329	*	195	*	269	*	270	*	107	*
Offices, private	148	*	205	*	599	*	47	*	55	*	29	*	33	*	30	*	12	*
Offices, public	79	*	88	*	203	*	18	*	19	*	10	*	19	*	20	*	8	*
Shopping centers, stores	110	*	163	*	278	*	49	*	53	*	30	*	33	*	32	*	12	*
Public industrial, military and atomic energy	134	*	189	*	321	*	59	*	72	*	32	*	160	*	171	*	39	*
Other building: private	257	*	318	*	364	*	100	*	109	*	59	*	103	*	98	*	36	*
Other building: public	157	*	180	*	262	*	56	*	64	*	38	*	59	*	59	*	18	*
Federal (included above)	294	+339	292	+147	793	+147	58	+53	71	+145	36	+157	126	+85	129	+130	32	+146

*Breakdown not available before 1958

ENR Data

Tollroad Awards Could Rise by 13%

Toll Facilities Contracts, 1958 and 1959

Reported to ENR by toll authorities and states (add 000)

AGENCY	CONSTRUCTION CONTRACTS Scheduled 1959	Let 1958	Percent Change	MAINTENANCE By Own Forces 1959	1958	Percent Change	By Contract 1959	1958	Percent Change
Alabama Turnpike Auth.	a	0							
Florida State Turnpike Auth	350	0		300	315	− 5	0	0	
Illinois State Toll Highway Comm.	500	5,000	−92	200	0		100	0	
Indiana Toll Road Comm	452	373	+ 4	900	815	+11	0	0	
Kansas Turnpike Auth	1,111 d	6,802	−98	528	410	+29	1	0	
Maine Turnpike Authority	139	120	+21	550	525	+ 5			
Massachusetts Turnpike Auth	10	131	−92	1,380	1,710	−19	50	154	−68
Michigan Turnpike Auth	e	e							
New Jersey Turnpike Auth	1,500	1,500	52	1,800	1,900	− 5	100	100	0
New Jersey Highway Auth	2,000 g	1,727	+16	1,616 h	1,182 h	+37	104	92	+13
New York State Thruway Auth	21,827 f	22,500	− 3	1,811	1,811	0	k	k	
Ohio Turnpike Comm	20	600	−97	1,170	1,225	− 5	80	87	− 8
Oklahoma Turnpike Auth	0	0		300	270	+11	n.a.	425	
Pennsylvania Turnpike Comm.	1,315	114	+203	2,181	2,336	− 6	853	943	− 10
Texas Turnpike Auth	50	26	+ 93	158	134	+18	11	216	− 94
Va.: Richmond-Petersburg Tnpk. Auth	0	0		1			0	0	
Va.: Coastal Tnpk. Auth	0								
West Virginia Turnpike Comm	25	0		255	273	− 7	10	0	
Greater Hartford Bridge Auth	200	1,000	−87	110	110	0	30	15	+100
Port of New York Auth	15,000	22,000	− 32	1,550	2,125	−31	115	60	+ 92
Washington Toll Bridge	12,741	3,451	+422	0	0		0	0	
State Highway Depts.									
Colorado	0	0		35	30	+ 6	5	7	− 29
Connecticut	135	2,396	−94	q	q				
Kentucky	0	0		80	60	+33	10	9	+ 10
Maryland	0	541	−100	345	268	+25	52	48	+ 12
New Hampshire	0	r		561	503	+11	0	100	−100
Total Authorities and States S	$86,709	$76,959	+ 13	$20,794	$19,872	+ 5	$1,850	$2,051	− 10

AGENCY	NEW EQUIPMENT PURCHASES 1959	1958	Percent Change	CONSULTING ENGINEERING SERVICES 1959	1958	Percent Change
Alabama Turnpike Auth.						
Florida State Turnpike	25	44	− 43	15	13	+ 15
Illinois State Toll Highway Comm.	200	1,200	− 83	250	3,000	− 92
Indiana Toll Road Comm.	b	b		48 e	60 e	− 20
Kansas Turnpike Auth.	28	8	+250	117	441	− 73
Maine Turnpike Auth.	50	10	+400	50	23	+117
Massachusetts Turnpike Auth.	50	208	− 76	25	25	0
Michigan Turnpike Auth.						
New Jersey Turnpike Auth.	30	130	− 69	f	f	
New Jersey Highway Auth.	129	55	+135	200 i	343 j	− 42
New York State Thruway Auth.	192	189	+ 2	9811	1,0131	− 3
Ohio Turnpike Comm.	260	61	+326	60	133	− 55
Oklahoma Turnpike Auth.	12	10	+ 20	0	0	
Pennsylvania Turnpike Comm.	157	165	− 5	120	145	− 17
Texas Turnpike Auth.	10	19	− 47	12 m	17 m	− 29
Va.: Richmond-Petersburg Turnpike Authority	0			o		
Va.: Coastal Tnpk. Auth.						
West Virginia Turnpike Comm.	0	0		6	6	0
Greater Hartford Bridge Auth.	25	105	− 76	200	770	− 74
Port of New York Auth.	155	75	+107	0	15	−100
Washington Toll Bridge Auth.	0	0		0	0	
State Highway Depts.						
Colorado	15	18	− 17	0	0	
Connecticut	q	q				
Kentucky	0	0		1	1	0
Maryland	0	185	−100	34	31	+ 10
New Hampshire	0	0		0	0	
TOTAL Authorities and States S	$1,648	$3,272	− 50	$3,975	$6,050	− 34

FOOTNOTES FOR TOLLROAD TABLE 1959

n.a.—Not available. •a No contracts let in 1958 due to federal and highway program, but APA still in existence and will build turnpikes in future. •b Equipment rented. •c For maintenance and operation. Engineering for 1958 on construction contracts scheduled to date will be done by Commission engineers. •d Kansas City Expressway largely completed in 1958. No new projects in view. •e No plans for financing or constructing tollroads in immediate future. Remaining funds $77,000 returned to State Highway Department. •f Variable. •g Anticipated but not yet approved. •h Includes $290,000 for street lighting in '59, $272,501 for '58. •i Estimated if program approved. •j Includes $262,750 for design and supervision of construction; $80,000 for general consultant services and special studies. •k Included in "Own forces" total. •l For supervision of construction contracts only. •m Excludes funds paid on contracts awarded prior to 1958. •n First section opened June 30, 1958, balance on Aug. 12, 1958 as result of contracts awarded prior to Jan. 1958. •o No additional services other than those regularly contemplated under Trust Agreement for annual inspection of turnpike properties and recommendations re funds needed for operation and maintenance. •p Construction of tollroad discontinued due to difficulty in disposing of bonds. •q Included with regular highway budgets. See State Highway table, ENR April 23, Page 100 and 102. •r Federal-aid urban projects of about $1,150,000 contracted in 1958 to widen nontoll Nashua Bypass section of Central Turnpike to four lanes. •s Based on comparable reporting agencies for '59 and '58; figures in parenthesis omitted from totals. •t Part of this for 1960.

Contract awards in 1959 for toll facility construction will rise 13% over 1958 if the states and authorities fulfill goals reported to ENR (see table).

Contracts scheduled for letting in 1959 total $86.7 million, compared to actual spending of $76.9 million last year. However, of the 1959 total, $79.6 million will be accounted for by three toll authorities. They are:

- Port of New York Authority, $15 million.
- Washington State Toll Bridge Authority, $12.7 million.
- New York State Thruway Authority, $21.9 million.

The remaining $7.1 million of planned contracting is scattered among 14 other states and authorities reporting spending planned for this year. Nine states and authorities don't expect to let contracts this year.

Year-to-year comparisons of other types of spending on toll facilities are not as favorable as the contract awards outlook.

Maintenance outlays planned for this year on a contract basis are expected to be down 10% from 1958. Maintenance by own forces, however, will rise 5% over 1958. Last year, states and authorities contracted $2.1 million worth of maintenance work. This year, anticipated outlays will be only $1.9 million.

Work done by own forces last year totaled $19.9 million. This year the total will go to $20.8 million.

Outlays this year for consulting engineering services will show a sharper decline—34%. In 1958, expenditures for consulting engineering services totaled $6.1 million. This year, the total is placed at just under $4 million.

New equipment purchases this year will show an even sharper decline. They will drop 50% to $1.6 million from a 1958 total of $3.3 million.

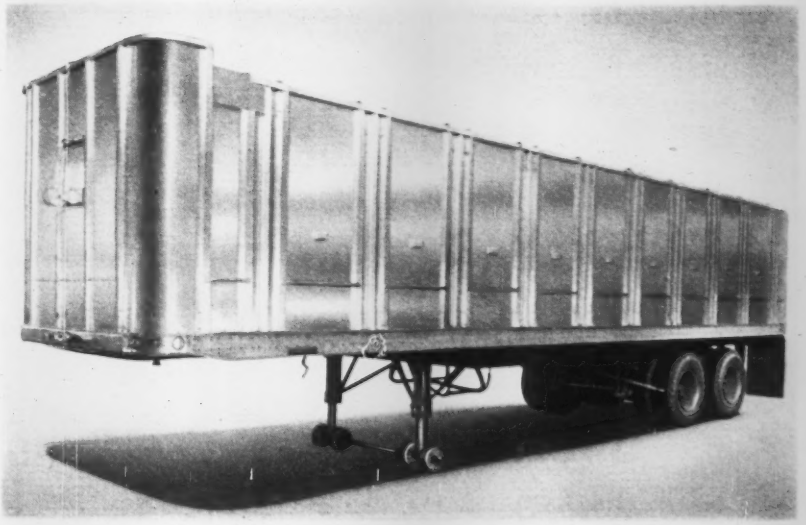
Largest construction contract volume increase over last year is planned by Washington State Toll Bridge Authority. Spending will go up 422% to $22.7 million. Next largest increase is 205% for Pennsylvania Turnpike Commission. However, dollar volume is small, $1.3 million. Port of New York Authority is third with a planned increase of 52%, and it also plans the largest dollar volume total.

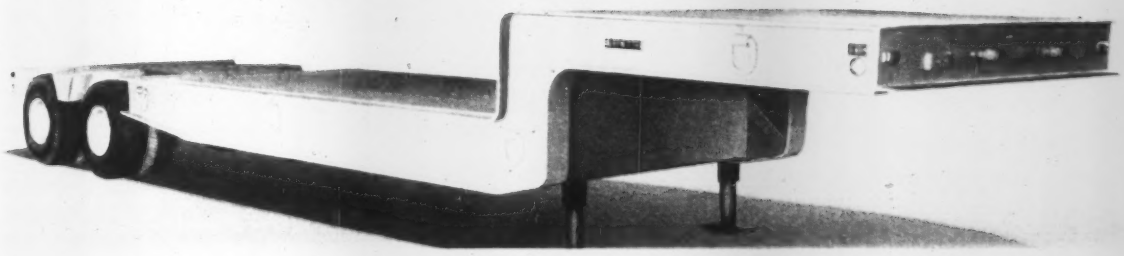
Maryland is the only one reporting a 100% cutback from 1958, although the contract volume in that year was relatively small. It awarded $541,000 in contracts last year. In 1959, no awards are planned.

NEW 1959 FRUEHAUFS FOR ROADBUILDERS

NEW STEEL OR ALUMINUM WORKHORSE RACK PLATFORMS

For Profitable Double Duty . . . These rugged, lightweight Fruehaufs serve as flatbeds hauling machinery, or as stake and rack units safely transporting damageable materials. Both units are built with deep, rugged, steel main beams, front and rear crossmembers, corner castings, and bumpers. Both feature an 80" bolted front end. Options include: choice of steel or aluminum for outside rails, crossmembers, racks, and tarp bows . . . hardwood or aluminum floors . . . racks 48" wide x 60" high or 48" x 72" . . . tie rings in the floor . . . stowage area at front for bows . . . all popular lengths . . . and single or tandem undercon-struction. Racks are interlocking, with convenient lifting bars.

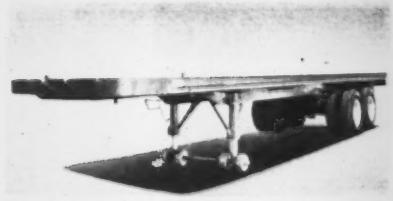




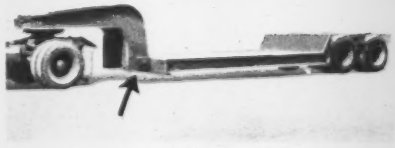
NEW, LOWER-PRICED 35-TON CARRYALLS

Lightweight And Tough . . . The strength of this new machinery unit is built into 2 beams rather than 4. There is a shorter gooseneck than usual, yet the same turning clearance radius from the king pin because the main frame members have been moved to the outside. Options include side outriggers and side loading ramp brackets. Carryalls available in capacities to 75 tons.

More High Capacity Units In Fruehauf's Rugged Roadbuilders' Line



Lightweight Multi-Purpose Platforms



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For Forty-Five Years—More Fruehauf Trailers On The Road Than Any Other Make!

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PLATFORMS CARRYALLS OTHERS

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COMPANY

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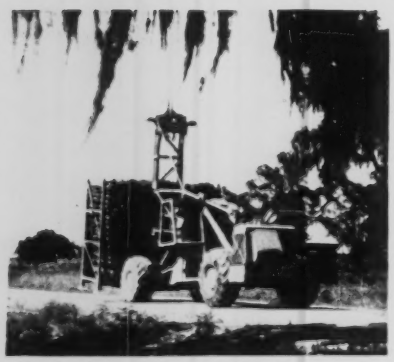
CITY

STATE

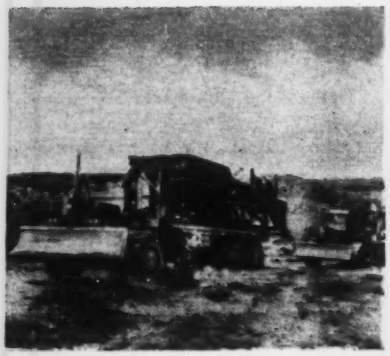
FREIGHT MOVES ACROSS DEEP ARCTIC SNOW ON ELECTRIC WHEEL "SNO-TRAIN" BY R. G. LeTOURNEAU, INC.

Heavy cargo . . . powdery snow . . . hundreds of miles from solid ground — these are conditions conquered by the Army's "Sno-train," built by R. G. LeTourneau, Inc.

Electric Wheels . . . sixteen or sixty and each a prime mover . . . make hauling possible where no other cargo vehicle has ever penetrated. "Floating" on huge, low-pressure tires — ten feet high and four feet wide — the Electric Wheels provide the

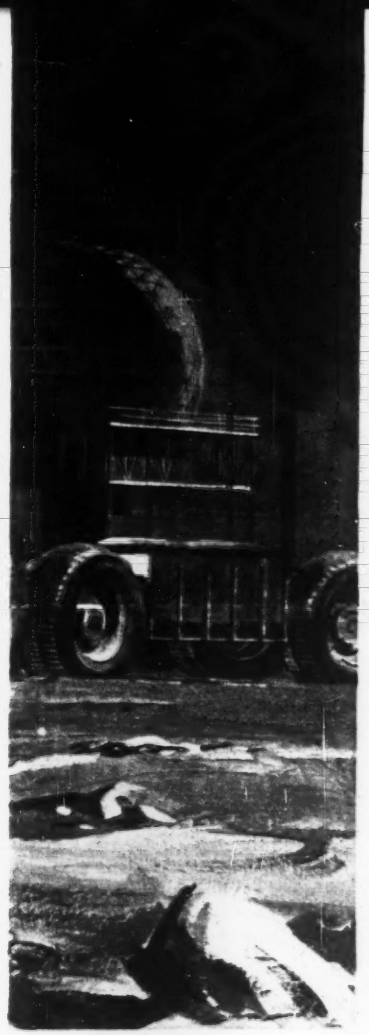


STACKER lifts . . . carries . . . stacks 30-ton loads. Electric Wheels give infinite range of power control from dead stop to full speed for smooth, fast traveling, and tremendous torque for muddy yards.

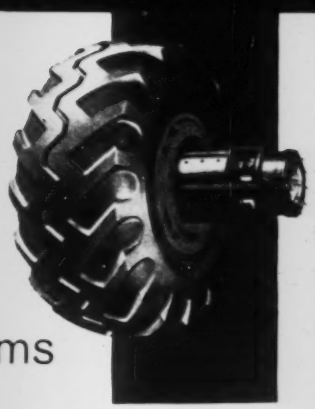


TRANSPORTER traverses Pakistan desert with oilfield equipment. Regenerative electric braking automatically holds machine and 30-ton load at pre-set speed . . . has no friction surfaces or wearing parts.

LANDING CRAFT RETRIEVER frees boats stranded in surf. Electric Wheels and 10-foot tires assure tremendous traction and flotation needed to operate thru water-soft sand. Simple fingertip controls are electric.



Electric Wheels Work as a Team To Out-Perform Other Drive Systems



For the last five years, the Electric Wheel developed by R. G. LeTourneau, Inc., has been used to power many types of machines . . . some of them built for jobs never before considered feasible. Where conventional machines have failed, the tremendous power of *numerous* driving wheels . . . four, forty or even more . . . has provided the cumulative traction needed to carry heavy loads cross-country.

This capability has been successfully applied in mobile machines for industry wherever tremendous tractive power is required. It is now available for hauling, digging, pushing and other BIG construction jobs. Because the Electric Wheel is its own self-contained power package, design is not limited by power-transmission systems. These wheels are *prime movers*, for use wherever—and in whatever numbers needed, whether a four-wheel tractor, a six-wheel scraper or a fifty-wheel ore train.

Now in Earthmoving

Earthmoving machines with all-wheel electric drive — one of them shown below — are now being built for the BIG jobs in construction and mining. For information please call or write 2395 South MacArthur, Longview, Texas.

tremendous traction needed to move big, heavy payloads cross-country.

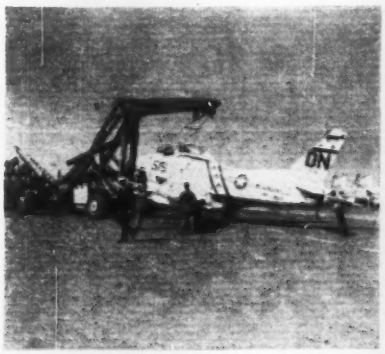
Automatic sharing of power to wheels with best traction . . . simple electric controls . . . electric braking . . . are other features that make this and other overland trains built by R. G. LeTourneau, Inc., forerunners of a new era in overland transportation.

Have your men consider this system of transportation when planning your next BIG mining or construction job.

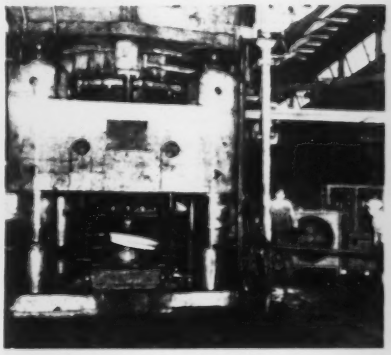
R.G. LETOURNEAU INC

LONGVIEW, TEXAS

E-104



Crane for Navy carriers handles plane dispersal and quickly clears deck of crashed planes. All work functions powered by electric motors which give "inching" control, positive safety.



Forging Press shapes part for Electric Drive machine in one of our plants. All components that go into equipment are built by R. G. LeTourneau, Inc., to assure dependable, trouble-free performance.

New Earthmoving Equipment. L-28 Ton Digging Scraper is latest of new Electric Drive earthmoving equipment now working. Write for information on exciting new machines for your BIG jobs.

from the
BUTLER ENGINEER

. . . of pouring concrete in -32° weather and the hot (212°) Cat Girl

Supercrete Ltd., Winnipeg and other locations, is the answer to the popular song "Make Me a Miracle"—only they make multiple miracles . . . Owners of a Butler HP-85 with 2 turbine-type mixers, working alternately, the Supercrete folks pour Central Mixed at 180 yards an hour, hour in and hour out.

Not only that. Those lads can show us fantastic things about working in Siberian-type weather. Examples: trucking concrete 53 miles, temperature at 15°; pouring for 72 hours in 32° weather. Impossible! But they do it.

Well, the Ready Mixed Convention at New Orleans is behind us—but pleasant memories stay abreast. "Abrcast," now there's an appropriate word, for it brings to mind the Cat Girl at one of the better N.O. hot-spots. Never in all the Butler Engineer's sophisticated experience has there been anything like it. The bumps and grinds made exotically beautiful. Like a ballet. Salome was a piker. Such disciplined muscles . . . Such a disciplined Butler Engineer. (My wife was along.)

Speaking of wives, there were over 600 of 'em at the Convention. And over 2000 men.

Hundreds tore themselves away from the Cat Girl to inspect the dramatic new Jahncke Ready Mixed Plant. It's located practically downtown on a big piece of land near the river. Wonderful system of materials handling.

Only 4 men operate everything. It's fully automated, of course, and your Butler Engineer is delighted to say "every smitch of it is Butler equipment."

Take good care of yourselves.

The Butler Engineer

BUTLER BIN COMPANY
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TVA Bond Bill Passes House

Disregarding the overhanging threat of a Presidential veto, the House last week passed a controversial bill that would make the Tennessee Valley Authority independent for expansion of power-generating facilities (ENR Apr. 30, p. 27).

The essence of the bill is the provision that TVA can issue its own revenue bonds. Such bonds—of which no more than $750 million could be outstanding at any time—would not become part of the public debt, nor would they be federally guaranteed. They would be exempt from state and local taxes.

The 245-170 House vote for final passage was the biggest legislative hurdle for the bill, which in various forms has been kicking around the Capitol since 1954. Two years ago, the Senate passed comparable legislation but the proposition then was bottled up in the ultraconservative Rules Committee of the House.

This year, easy Senate passage is a foregone conclusion. It is even probable that Senate manager of the bill will soften a section aimed at "fencing in" TVA. To help squeeze the bill through the House, its managers in that body accepted a restrictive clause that would bar TVA extending electric power service beyond its present confines. This is an area of 80,000 sq mi encompassing most of Tennessee and portions of Kentucky, Alabama, Georgia, Mississippi, North Carolina and Virginia.

Republican House members, leading the fight on the bill, warned that President Eisenhower almost certainly would veto any version that does not allow for: (1) Budget Bureau review of TVA's construction plans, (2) Treasury Department authority to veto bond flotations, and (3) Treasury determination of interest rates on bonds. Amendments were offered on all these points. All were beaten down by Democrats.

Officials have estimated that TVA would issue revenue bonds up to the $750 million ceiling within five to seven years, mainly for construction of new steam plants and enlargement of existing steam facilities. All of the nearby hydro sites in the Tennessee Valley are developed. Only a handful of minor ones remain for possible harnessing.

The pending legislation would also allow TVA to make lease-purchase contracts for independent power facilities existing within its service boundaries. This has led to speculation that TVA ultimately will take over the plant now being built on the Mississippi River by the City of Memphis. This municipal project is the successor to the so-called "Dixon-Yates" private project that blossomed, and then collapsed amid charges of impropriety, in the early days of the Eisenhower Administration.

New Machinery Orders Break March Records

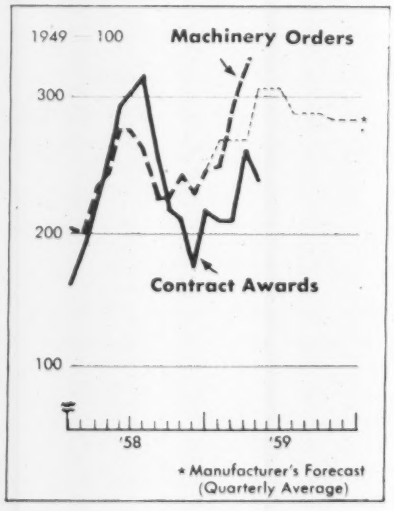
The fast pace of heavy construction contracts is creating record demand for new equipment. Orders for construction and mining machinery soared to an all-time high in March, according to manufacturers reporting to McGraw-Hill's Department of Economics.

The New Orders Index in March climbed for the fourth consecutive month to a value of 339. The index is based on 1949=100. The March value is 14% above February's reading of 298, and 46% above March 1958.

The New Orders Index has averaged 297 per month. This is above the monthly average of 286 that manufacturers have forecast for all 1958.

The rise in equipment orders outpaced the increase in new business going to contractors. Heavy construction contracts reported by ENR through the end of March were 20% above 1958. Awards registered the second largest March total on record with a 262 Contract Award Index.

But, the margin of increase over 1958 was cut to 10% in April. The April award rate slackened to 243. This is the third highest April on record.



Pay Boosts Hold Steady Pace

The average hourly wage of union building trades workers rose to $3.40 at the end of the first quarter of this year, according to the U. S. Labor Department's Bureau of Labor Statistics. Bricklayers are the highest with an average of $3.95 and building laborers the lowest with $2.52. (See table.)

This put the April 1 level of rates 65% above the 1947-49 average, the bureau reports, and 4.6% higher than a year ago.

Average wage increase since April 1, 1958, according to the government figures, is 14.7 cents for all trades combined; it varied from 10.5 to 17 cents for the individual trades surveyed.

Construction industry wage settlements reported to ENR since April 1 continue to provide for pay increases ranging from 7½ to 20 cents an hour. The new agreements, which generally continue to take the form of long-term contracts, also provide for various improvements in fringe benefits.

The agreements have introduced little that is new in collective bargaining. Labor's 10-point work practices code appears to have played a negligible role and emphasis on hiring procedures was spotty. Performance of construction work by industrial unions and the orderly settlement of jurisdictional disputes attracted little, if any, attention.

One of the new contracts, however, cuts overtime pay on industrial work in plants that are in operation from double time to time and a half and reduces travel pay by extending the free zone from 10 to 25 miles. Another contains an escalator clause for cost-of-living increases in addition to scheduled pay boosts of 10 cents each year.

Of 23 recently reported settlements, the following characteristics emerge:

- Two-year contracts predominate. (Seventeen were for two years, five for one year and one for three years.)
- Wage increases payable in 1959 average 14.02 cents and range from five cents an hour to 20 cents. Half of them are for 15 cents or more. In five cases, the 1959 increase is payable in two installments.
- The deferred increases, payable the second year in the two-year contracts, range from seven to 15 cents an hour and average 11.5 cents. The most popular figure is 10 cents.
- Of the 11 trades covered by the contracts, none has a corner on the market of high increases. The 20 cent increases, for example, went to locals of the sheetmetal workers, laborers, carpenters, plasterers and bricklayers unions.
- No particular fringe benefit comes in for emphasis. One bricklayers local union, however, won its first vacation plan—it calls for a 15-cent hourly contribution by employers—and another union obtained its first hospital and surgical plans. The latter, negotiated by a laborers local, is financed by a 7½ cent employer contribution.

In contrast to these current increases, which are averaging a little better than 14 cents an hour, the U. S. Labor Department reports that construction wage scales rose an average of 14.5 cents last year, 15 cents in 1957 and 13.6 cents in 1956.

It is widely believed that the steadiness of this upward trend is due, in part, to the use of long-term contracts in the past.

Thousands of northern California laborers, for example, received an automatic increase of 18 cents an hour on May 1 under the terms of a five-year contract negotiated in 1957. That contract called for deferred increases of 18 cents each year.

The Northern and Central California chapters of Associated General Contractors are now negotiating with half a dozen crafts. And observers in the field say "there is no question but that the laborers' contract is having its influence on these negotiations."

Current Wage Levels*

Trade	*Average*	*Range*
Bricklayers	$3.95	$2.50-4.55
Carpenters	3.51	2.00-4.20
Electricians	3.72	2.63-4.35
Painters	3.34	1.75-3.70
Plasterers	3.79	2.50-4.35
Plumbers	3.77	2.75-4.25
Laborers, bldg.	2.52	1.20-3.45

*BLS figures as of April 1, 1959.

Bricklayers Urge More Training

Donald R. Zimmer of Buffalo became the 1959 bricklayer apprentice champion last week.

The 19-year-old apprentice, who is indentured to Buffalo contractor A. W. Cowper, won the title in San Francisco in a national contest sponsored by the Bricklayers, Masons and Plasterers International Union. Purpose of the contest, in which 30 state champions competed, is to draw attention to the union's program of training skilled journeymen bricklayers.

John H. Murphy, secretary of the international union, pointed out during the course of the competition that apprenticeship training in the building trades will have to be increased to keep pace with the expanding construction industry.

There are now 14,000 men between the ages of 17 and 24 in the bricklayers' apprenticeship program, according to Harry C. Bates, president of the bricklayers union. Since the end of World War II, he said, over 60,000 journeymen bricklayers have completed the program.

Despite this achievement, however, the number of registered apprentices in the trowel trades dropped off by about 1,000 last year. This was characteristic of the general trend in the building trades, according to the U.S. Department of Labor, which says that each of the principal trades had fewer apprentices in 1958 than in the two previous years.

Donald R. Zimmer: Champion apprentice.

The fact that the construction industry may be creating a future shortage of skilled workers, Mr. Murphy observed, is making productivity, to which apprentice training contributes, an increasingly important factor.

Some Labor Law Is Clarified

NLRB rules a partial lockout illegal; two high courts tell contractors to seek federal remedies

Members of an employer association may call a total lockout as a defensive measure when a union strikes one of the members, but they cannot engage in a partial lockout in order to deprive their employees of state unemployment compensation.

That is the ruling of the National Labor Relations Board in a Montana case in which the employers tried to prevent the unemployment compensation system from being used to finance a strike.

One of the members of the association was struck and the other seven retaliated with a lockout. When the employees filed for unemployment compensation, the employers offered the workers just enough employment to disqualify them for compensation.

Under Montana law, a worker who earns more than $16 a week and works more than eight hours in one week can not receive jobless benefits.

If the workers accepted the work, they lost the right to $32 a week in benefits. If they refused it individually, they would be disqualified for refusing available work. And if they refused the work at the union's direction, they would be considered strikers and ineligible for compensation.

The board, in a split decision, ruled that the employers' plan was a "manipulation of tenure and terms of employment that infringed upon the collective bargaining rights of (the) employees and tended to discourage support of the union." It ordered the employers to give the workers back pay.

The dissenting members called the decision a "manifest absurdity." They said it has the effect of forcing the employers to finance the strike because the amount of unemployment tax paid by an employer increases with the amount of benefits paid his workers.

A state court is powerless to halt peaceful picketing to protest the use of nonunion workers on construction jobs in interstate commerce, unless the state has a right-to-work law or the National Labor Relations Board has formally ceded jurisdiction to the state.

For this reason, the U. S. Supreme Court and the Colorado Supreme Court have just set aside injunctions issued by state courts to prohibit such picketing. The fact that the picketing is banned by state law, or that the injunction is sought by a county or other political subdivision of a state, does not alter the situation.

Both decisions reaffirm the principle of federal pre-emption, which means that the federal government has exclusive jurisdiction over labor disputes covered by the Taft-Hartley Act. This is true even where the NLRB declines to exercise its jurisdiction—a situation that results in a jurisdictional no-man's land.

In the Colorado case, 10 construction unions and a Building Trades Council picketed a housing project to protest use of nonunion workers. The court ruled that the Taft-Hartley Act deprived state courts of the right to proceed under the Colorado Labor Peace Act and that the contractor should have turned to federal law for relief.

A similar situation occurred in a Wisconsin case. Nonunion workers appeared on a plumbing job at the Door County Courthouse and a plumbers union picketed the work. Although a state court held that the presence of the county in the dispute had removed the case from the NLRB's jurisdiction, the U. S. Supreme Court said the county was an "employer" under the federal law and that the doctrine of federal pre-emption still applied.

These two cases underscore the significance of the no-man's land debate touched off by the Kennedy labor reform bill. Opponents of the bill would restrict the doctrine of federal pre-emption by allowing state courts to act when the NLRB fails to do so.

Lockout Issue Raised In Steel Negotiations

The United Steelworkers of America last week injected the controversial problem of lockouts into the steel industry's wage negotiations now under way in New York City.

Arthur J. Goldberg, the union's counsel, accused the major steel companies of considering an industry-wide shutdown of operations if the union should engage in a selective strike on July 1. Claiming that such a lockout would be a violation of the Taft-Hartley Act, he asked the general counsel of the National Labor Relations Board to be prepared to take prompt action if a lockout should occur.

Key to Mr. Goldberg's argument is now familiar to most employers in the construction industry. The 12 steel companies are negotiating as individual bargaining units and not as a multi-employer association.

The right to engage in a lockout, Mr. Goldberg points out, exists only where multi-employer bargaining takes place under the sanction of the NLRB. In such a case, the courts and the board hold, a strike against one member of the group may be considered a strike against all and a lockout is a permissible defensive measure.

The right to engage in a lockout even under these circumstances, however, is not spelled out in the law. It was for this reason that the construction industry submitted a formal recommendation to President Eisenhower in 1957 that the law be amended to give an association or other multi-employer group the same rights and privileges as individuals in labor-management relations.

Fewer Worker Injuries in '58

The number of disabling injuries to American workers, including those in the construction industry, dropped last year to its lowest figure since 1939.

But the 1,810,000 injuries that did occur caused the loss of 38 million man-days of work. If the future effects of death and permanent disability are taken into account, the total soars to 100 million man-days—the equivalent of a year's full-time employment for about 515,000 workers. Included in these figures are 187,000 injuries to workers in construction, which is rated the fifth most hazardous industry.

These are the preliminary estimates of the U. S. Labor Department.

They form the background against which the National Safety Council has given its 1958 Award of Honor to The H. K. Ferguson Company, Cleveland engineers and builders, for outstanding achievement in the field of safety.

The award is based not only on accident experience for the year but also on the degree of improvement made over the previous three years.

Commenting on the award, Ferguson officials said it "proves that an aggressive and effective accident prevention program is both feasible and possible in the building industry if the program has the wholehearted support of management and workers alike."

Ferguson achieved an improvement of 67% in its frequency rate—now 5.50—for the previous three years and a 90% improvement in its severity rate—now 169.78—for the same period.

Labor continued p. 194

Link-Belt Speeder introduces

NEW LS-108

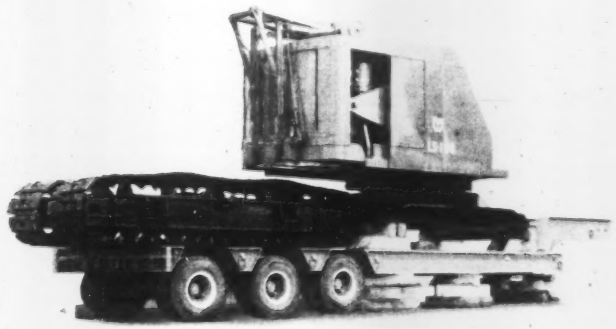
40-TON CRAWLER CRANE

- Strips to 32,000 lbs. and 8′ width in 2 hours or less
- Lifts and walks with more than its own weight
- Unassisted, lifts and handles up to 160′ of new "HI-LITE" boom and jib

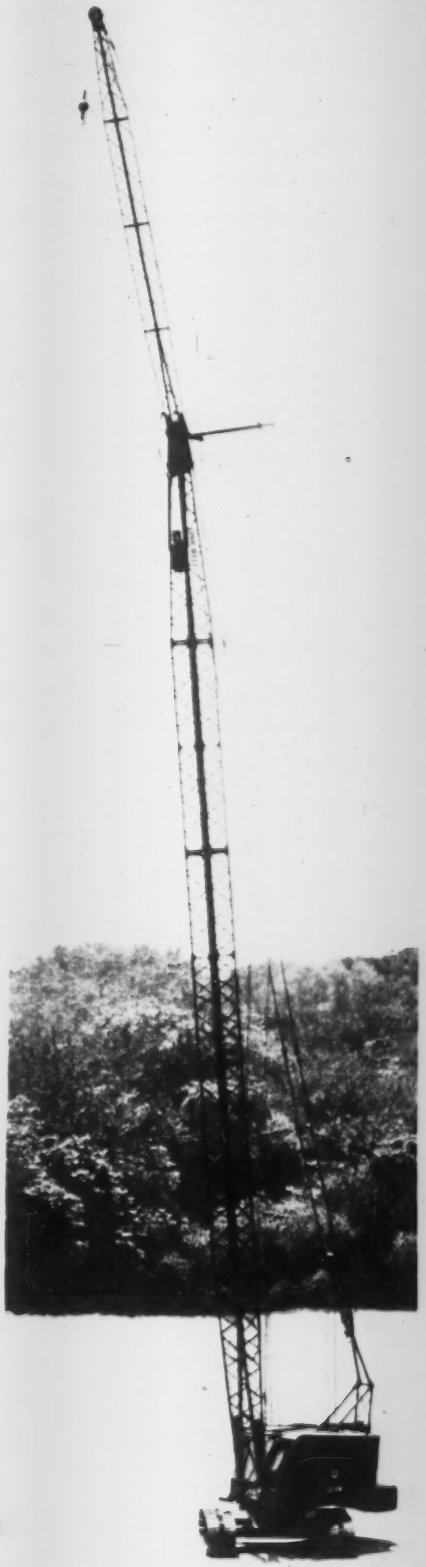
Here's a machine that combines high lifting capacity with exceptional mobility and transportability. Imagine a lifting crane that lifts and walks with 80,000 lbs. yet strips down for transport in 2 hours or less to approximately 32,000 lbs. and 8′ width.

In addition, the LS-108 introduces an entirely new *low-cost concept* in 40-ton lifting cranes. Just compare this list of lifting crane features with any other crane on the market: power hydraulic controls, reversing clutches for either or both main operating drums, two speed travel in either direction, independent swing and travel, independent rapid boomhoist with boom-lowering clutch, powerful third drum and many others. And the LS-108 is convertible to standard hoe, clamshell or dragline attachments.

See your Link-Belt Speeder distributor for new catalog or write Link-Belt Speeder Corporation, Cedar Rapids, Iowa. 14,503



READY FOR TRANSPORT IN 2 HOURS OR LESS. Using the powered gantry, the counterweight is removed. Travel onto lowbos, block up and remove both side frames without help from auxiliary crane. After removing the attachment (and with crawlers on a separate trailer), you're stripped from 78,200 lbs. to a travel weight of approximately 32,000 lbs. . . . and to an over-all width of 8 ft.



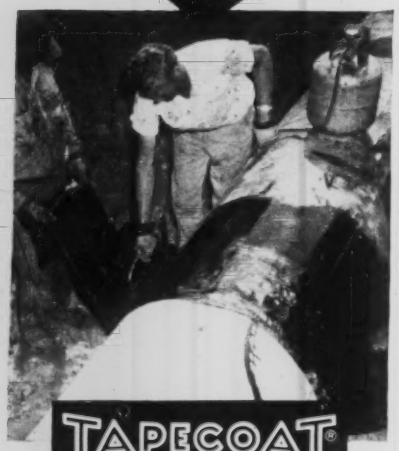
LINK-BELT SPEEDER

21 crawlers · 6 truck-cranes · 4 self propelled

It's time to compare . . . with Link-Belt Speeder

The **PROVED** Way to

CUT CORROSION COSTS!



Helps Add Years of Service Life to Underground Lines

No other tape can match the 18-year protection record of TAPECOAT, the quality coal tar coating in tape form. Steel pipe and other vulnerable surfaces TAPECOATED back in 1941 still show no signs of deterioration.

Field application costs are lower with TAPECOAT because it is so easy to apply with the use of a torch. No trained help required.

TAPECOAT comes in rolls of 2", 3", 4", 6", 18" and 24" widths and is applied spirally or by "cigarette wrapping."

You can depend on TAPECOAT for protecting pipe, pipe joints, fittings, couplings, tanks, conduit, cable, splices, insulated lines, tie rods or wherever severe corrosive or abrasive conditions must be overcome.

A TAPECOAT sales and service engineer will be glad to assist you on your corrosion problems.

Write for Brochure and Prices

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1551 Lyons Street, Evanston, Illinois

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The Tapecoat Company of Canada, Ltd.
25 Haas Road, Rexdale, Ontario

Labor in Brief . . .

• **Brown-Olds remedy**—A national Labor Relations Board trial examiner has ruled that a contractor who attempted to conform his hiring practices to the NLRB's Mountain Pacific mandate should not be subjected to the Brown-Old's reimbursement remedy for a violation that occurred during last year's moratorium on the remedy.

• **Investigation requested**—Rhode Island's General Assembly has been asked by the State Health Director to investigate the reasons why half the candidates who take examinations for state plumbing licenses fail to pass. "One would be inclined to think," he says, "that either the training is inadequate or that the examinations are improperly conceived."

• **Prevailing wages**—The Maine legislature killed a bill that would have required payment of prevailing wages on all state construction projects undertaken either by force account or contract.

• **Unionist as contractor**—County Commissioners in Fort Wayne, Ind., have a problem. They awarded a contract for a courthouse paint job to the lowest of five bidders—the president of the local painters union. One of the other bidders questions "the legality" of a union officer competing with contractors.

• **Shorter workweek**—The International Brotherhood of Electrical Workers has called upon its local unions to seek a shorter workweek, without a reduction in pay, through collective bargaining. It says the move is necessary to provide work for the unemployed.

• **Work stoppages**—Labor disputes that threatened to disrupt construction schedules have plagued the $720-million Niagara Power Project and the new Atlanta, Ga., air terminal. One reportedly centered around the hiring of out-of-town workers and the other around one subcontractor's employment of nonunion men.

A Boycott Puzzle for Congress

When is a strike legal as a primary dispute and when is it unlawful as a secondary boycott?

Union criticism of a recent National Labor Relations Board decision in the Detroit Edison case (ENR Apr. 9, p. 108) shows why the answer still eludes the construction industry, and teases those who want to "strengthen" the Kennedy labor reform bill.

In the Edison case, a national labor agreement between the plumbers union and National Constructors Association required pipe fabrication to be performed at the job site, although pipe over two inches in diameter could be fabricated off-site, but only in shops organized by the plumbers and paying construction wage scales. The union reserved the right to refuse to handle pipe that violated the clause.

On a job under construction for Detroit Edison Co. by an NCA member, the plumbers refused to install piping ordered by Edison but fabricated by Westinghouse Electric Corp. in violation of the clause.

Was this a primary dispute or a secondary boycott?

The NLRB said it was an illegal secondary boycott. The Taft-Hartley Act outlaws as a secondary boycott a strike aimed at forcing an employer (the NCA contractor or Detroit Edison) to quit doing business with another person (Westinghouse). Under the board's reasoning, the primary dispute was with Westinghouse and the contractor was a neutral party the law seeks to protect.

Peter T. Schoemann, president of the plumbers union, now says it was "a primary strike" against the contractor "for violating a clause of their agreement with us." What Edison did or what Westinghouse did, he argues, "was no concern of ours" and the effects of the strike on them "were purely incidental to the main dispute."

The fabrication clause, Mr. Schoemann contends, has the "single and very legitimate purpose" of protecting the work of our craft and the wages of our craftsmen on construction work."

This is the same argument used by the carpenters in their efforts to enforce their fabrication clauses and by the sheetmetal workers in their refusals to install Butt ventilators.

Mr. Schoemann feels that the union's right to strike in such a case is protected by Section 13 of the law, which says the right to strike shall not be limited except "as specifically provided."

Who is right? Mr. Schoemann says he will go to the Supreme Court, if necessary, to find out.

Mechanic's Lien

Will not attach beyond amount due on contract

The right to file and to foreclose a mechanic's lien is limited by law. One of the limitations, at least in New York, is that a lien will attach only to the extent of money due the contractor under the contract.

An example of this limitation appears in a New York case involving home construction.

Because of delays in the work, the owner exercised his right to terminate the contract and discharge the contractor. This occurred before the house was completed but after the contractor had been paid $10,400 of the $21,588 contract price. The owner completed the work but it cost him more than the balance of the contract price.

Parties who had filed mechanics liens for goods and services rendered the contractor sued the owner and mortgagee to foreclose the liens.

The action was dismissed because there was nothing to which the lien could attach.

The decision turned on Section 4 of the New York Lien Law which says: "If labor is performed for, or materials furnished to, a contractor or subcontractor for an improvement, the lien shall not be for a sum greater than the sum earned and unpaid on the contract at the time of filing the notice of lien, and any sum subsequently earned thereon. In no case shall the owner be liable to pay by reason of all liens created pursuant to this article a sum greater than the value or agreed price of the labor and materials remaining unpaid, at the time of filing notices of such liens."

In construing the law, the court turned to an earlier analysis by the New York Court of Appeals, which said:

"If nothing is due to the contractor, pursuant to the contract, when the lien is filed, and he abandons the undertaking without just cause, but the owner completes the building according to the contract and under a provision thereof permitting it, the lien attaches to the extent of the difference between the cost of completion and the amount unpaid when the lien was filed."

"It is apparent" the court continued, that this is applicable to the present action and that plaintiffs' lien attaches only to the difference between the cost of completing the improvement and the amount of the contract price unpaid when the lien is filed. When the cost of completing the building equals or exceeds the amount unpaid on the contract, there is nothing on which the

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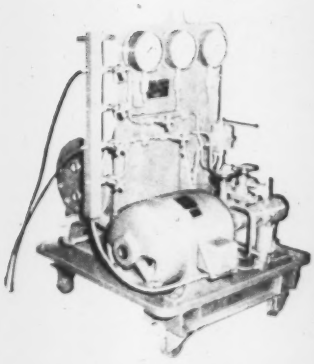

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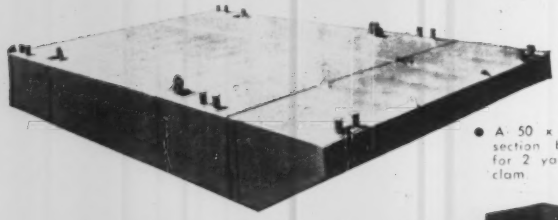

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lien of a subcontractor may attach. In Crane v. Genin, 60 N. Y. 127, at page 131, the Court said: 'The settled construction of the lien law is that, except in case of fraud, the owner cannot, under any of its provisions, be compelled to pay any greater sum for the completion of a building than by his contract he has agreed to pay.'"

(1) Mavcumber v. Wolfe, 171 N.Y.S. 2d 44, Supreme Court, New York, Jan. 27, 1958.

(2) Van Clief v. Van Vechten, 130 N. Y. 581, 29 N. E. 1017.

Contract Payment

Court limits the time owner can take to pay

A contractor must be paid within a reasonable time after he fulfills his contract, unless substantial evidence indicates a specific time to pay.

A contractor and a Rhode Island property owner made an oral contract whereby the contractor was to furnish and deliver fill on certain lots and level the ground to a certain grade. In return, he was to get $2 per load of fill.

Under terms of the contract, the contractor delivered 620 loads of fill, entitling him to $1,240 in payment. After the work was completed, the owner expressed satisfaction with the work. However, when the contractor requested payment, the property owner asked for time to raise the money he owed. The contractor agreed to wait, but did not specify how long.

The contract was made on October 13, 1950, work was completed about six months later. In the summer of 1952, the contractor billed the owner.

The owner refused to pay. The contractor finally sued and obtained a court judgement against the owner.

The property owner did not deny his debt. But, he contended, the contractor agreed when the contract was made, that payment was not to be made until the land was sold. The court ruled that testimony given at the trial did not prove an agreement that the contractor would wait until the land was sold.

(1) Dubois v. Graziani, 139 A. 2d 143, Supreme Court of Rhode Island, Feb. 27, 1958.

These summaries of court decisions are prepared by I. Vernon Werbin, Esq., New York attorney and licensed professional engineer, who is author of the following books published by McGraw-Hill Book Company, Inc.: *Legal Phases of Construction Contracts; Legal Guide for Contractors, Architects and Engineers;* and *Legal Cases for Contractors, Architects and Engineers.*

OFFICIAL PROPOSALS

Bids: June 4, 1959

New York State Road Work

NOTICE TO CONTRACTORS—STATE DEPARTMENT OF PUBLIC WORKS—ALBANY, N. Y.—Pursuant to the provisions of the Highway Law, Public Buildings Law, Canal Law, and special provisions for projects financed with Federal Aid Funds, sealed proposals will be received until ten-thirty o'clock A.M., advanced standard time which is nine-thirty o'clock A.M., eastern standard time, on the 4th day of June 1959, by Henry A. Cohen, Director, Bureau of Contracts, 12th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects:

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of Work
DISTRICT No. 1: G. L. Nickerson, District Engineer, 535 Broadway, Albany 1, New York						
Albany	FARC 59-46	Altamont-Voorheesville, SH1541 Proj. S-554-1	0.30	Asph. Conc. Pavt. (0.27 Mi.), Misc. Work (0.30 Mi.) Br. No. 1, R.C. Closed Box, 24' SP.	$5,000 Plans $5	$87,000
Albany & Saratoga Rte. 9	FARC 59-44	Loudonville-Cohoes, SH5555, London Crescent Pt. 2, SH5611, Cohoes Park-Crescent Pt. 2, SH5639 Proj. F-639-14	2.09	Asphalt Conc. Pavt.	$15,000 Plans $5	627,000
Albany Rtes. 9 & 7	T-S 59-8	London Road Pt. 2, SH1119, Troy-Schenectady Pt. 1, SH640, Troy-Schenectady Pt. 4, SH640, London-Crescent, SH5555	2.14	Traffic Signs	$1,500 Plans $5	63,000
DISTRICT No. 2: Lacy Kercheval, District Engineer, 100 No. Genesee Street, Utica 1, New York						
Montgomery Rte. 10	R.C. 59-48	Palatine Bridge-Stone Arabia, SH317, Stone Arabia-Ephratah, Pt. 1, SH1504	6.49	Asph. Conc. Type 1A, Pavt.	$10,000 Plans $5	157,000
Montgomery Rte. 5	R.C. 59-49	St. Johnsville-Nelliston, SH5109 Nelliston-Palatine Br., SH5123	3.50	Asph. Conc. Type 1A, Pavt.	$10,000 Plans $5	175,000
Oneida Rte. 126	FARC 59-19	Whitesboro-Trenton, SH5125 Proj. S-211-3	0.47	Asph. Conc. Ty. 1A Pavt. Prestress. Conc. Beam Br. 2 Sp. 140'	$10,000 Plans $5	171,000
DISTRICT No. 3: Earle E. Towson, Acting District Engineer, 333 E. Washington St., Syracuse, New York						
Cortland, Onondaga, Oswego & Tompkins Cortland & Onondaga Rtes. 11 & 281	R.C. 59-50 FARC 59-69	13 Various Highways in District No. 3, on Routes 281, 31, 11A, 48, 104, 34 and 31B Lafayette-Tully, SH5516 Preble-Tully Center Pts. 1 & 2 Fash. 45-1 Proj. F-215-6; S-563-1	92.24 5.46	Subsealing Cement Conc. Pavement Asph. Conc. Ty. 1A Pavement	$15,000 Plans $5 $8,000 Plans $5	268,000 737,000
Onondaga Rte. 11	R.C. 59-54	Syracuse-Lafayette, SH5365, Lafayette, SH76 Lafayette-Tully, SH5516	10.20	Asph. Conc. Ty. 1A Pavt.	$22,000 Plans $5	806,000
Onondaga Rte. 11	FARC 59-45	Cicero-Brewerton, SH5239 Proj. F-363-19	0.23	Asph. Conc. Ty. 1A Pavt.	$2,000 Plans $5	58,000
Seneca Rte. 414	FARC 59-68	Reservation Road-Fayette, S.H. 120 Proj. S-671-2	5.72	Asph. Conc. Ty. 1A Pavt.	$10,000 Plans $5	185,000
Wayne Rte. 104	FARC 59-50	Sodus-Alton, SH5632, Alton-Wolcott Pt. 1, SH1516 Proj. F-362-9	7.80	Asph. Conc. Ty. 1A	$15,000 Plans $5	263,000
DISTRICT No. 4: R. E. Penny, District Engineer, Barge Canal Terminal, Rochester 1, New York						
Livingston Rte. 36	FARC 59-42	Caledonia-Mount Morris Pt. 1, SH5566 Proj. S-472-1	6.03	Asph. Conc. Ty. 1A Pavt. (6.01 Mi.) Miscell. Work (0.02 Mi.)	$11,000 Plans $5	251,000
Monroe Rte. 104	FASS 59-83	Union Street Co. Rd. 37 Proj. S-508-1	0.23	Asph. Conc. Pavt. (0.15 Mi.), Misc. Work (0.08 Mi.) Conc. T-Beam Bridge 2 Sp. 109'	$7,200 Plans $5	130,000
Monroe	T-S 59-6	Lake Ontario State Parkway, Sects. A & B	10.32	Traffic Signs & Delineators	$5,000 Plans $5	88,000
Monroe Rte. 104	FARC 59-57	Ridge, Part 1, Rochester-Wayne, SH6 Proj. F-362-10	2.27	Asph. Conc. Ty. 1A Pavt. (2.23 Mi.) Misc. Work (0.06 Mi.)	$8,000 Plans $5	154,000
Monroe	M 59-5	Bridge I-111, Weston Road Over Barge Canal		Cleaning & Painting Bridge	$250 Plans $10	1,500
DISTRICT No. 5: L. G. H. Vollmann, District Engineer, State Office Bldg., 65 Court Street, Buffalo 2, New York						
Cattaraugus	P.S.C. 18479	Elm Street Extension over Penna. Railroad in Portville	0.30	R.C. Cem. Conc. Pavt. 20' Wide, R.R. Sep. Comp. W.F. Beam 3 Sp. 132'	$14,000 Plans $5	266,000
Cattaraugus Rte. 17	R.C. 59-47	Carrollton-Killbuck, SH5418	1.95	Asph. Conc. Pavt.	$11,000 Plans $5	202,000
DISTRICT No. 6: James H. Thomas, District Engineer, State Office Bldg., 40 West Main Street, Hornell, New York						
Steuben	FASS 59-9	Mignan Bridge Co. Rd. 31 Proj. S-649-2	0.81	Rct. Mac. with Double Surf. Treat. Pavt., Prestress. Conc. Bridge 4 Sp. 234'	$20,000 Plans $5	377,000
Steuben Rte. 15 & 17	FASH 59-10 FASH 59-11P FARC 59-56	Painted Post-West City Line of Corning Pt. 1, Painted-Post-West City Line of Corning Pt. 2, Fash. 37-11 Corning-Painted Post, SH3026, 5211 Proj. F-176-2(5)-14 & F-360-10	2.70 1.99 Adv.	Asph. Conc. Pavt. (4.11 Mi.), Misc. Work (0.58 Mi.) I.R.C. Box Br. 2 Sp. 30', I.W.F. Comp. Beam Bridge 9 Sp. 575 S.F. + 2 Hy. Strps. W.F. Comp. Beams 4 Sp. 168.6' and 1 Sp. 108.6', I.R.R. Sep. Comp. Steel Girder 3 Sp. 250'	$135,000 Plans $5	6,069,000
Tioga Rte. 38	FARC 59-55	Newark Valley-Berkshire, Pt. 1, SH1077, Newark Valley-Berkshire, Pt. 2, SH1076, Richford-Harford Mills, SH1452 Proj. F-864-5 and F-427-10	8.39	Asp. Conc. Pavt. (8.47 Mi.), Misc. Work (0.02 Mi.) I.W.F. Comp. Beam Br. 2 Sp. 129', I.R.C. Twin Box Br. 24' Sp., Widen & Extd. R.C. Slab Box, 20' SP., 22.8' Sp. & 22.3' Sp., Widen Exist. 36' Sp. I-Beam Bridge, Rehabilitate Exist. 85' Sp. Plate Girder Br.	$118,000 Plans $5	2,139,000
DISTRICT No. 7: Robert W. Sweet, District Engineer, 317 Van Duzer Street, Watertown, New York						
Franklin, Jefferson, Lewis & St. Lawrence Rtes. 3, 193, 289, 26 & 56	R.C. 59-58	Rte. No. 1, SH847, Rte. No. 1, SH1150, Rte. No. 1, SH1965, Rte. No. 1, SH1190 & Rte. No. 3, SH5199 Rte. No. 1, SH1149		Cleaning & Painting 6 Bridges	$1,000 Plans $5	18,000
DISTRICT No. 9: Joseph C. Franklin, District Engineer, 71 Frederick Street, Binghamton, New York						
Broome Rte. 17	FARC 59-59	Park Bridge, SH127 Binghamton-Windsor Pt. 2, SH5022 Proj. F-434-23	1.92	Asph. Conc. Pavement	$11,000 Plans $5	212,000
DISTRICT No. 10: M. E. Gray, District Engineer, 325 W. Main Street, Babylon, L. I., New York						
New York	FAIRID 59-1	Harlem River Drive, East 138th St. to West 145th St. Proj. I-0145-3	0.40	Bulkhead Wall, Fill & Misc. Work Incid. Stage A Conc. Platform spanning Subway Tunnel Demolition of Buildings	$100,000 Plans $5 $1,000 Plans $5	1,785,000 168,000
Suffolk Rte. 110	FARC 59-10	Amityville Village, Broadway, SH1633, Huntington-Amityville Pt. 2, SH1219 Proj. S-297-5	2.32			

Any projects in this letting that are on the Federal Aid Highway systems are subject to the provisions of the Federal Aid Highway Act of 1956, being Public Law 627, 84th Congress, approved June 29, 1956, and are also subject to the applicable New York State statutes.

In compliance with the provisions of Section 220, Prevailing Rate of Wages, Public Law 627, the minimum wages to be paid laborers and mechanics are included in wage schedules that are set out in the bid proposal.

Maps, plans, specifications, and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts, Albany, N. Y., and at the office of the District Engineers noted above and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City. The deposit for Plans and Proposal Forms for each contract is indicated above. A refund will be made to bidders for return of one set in good condition within 20 days of award or rejection of bids. No refund for all other sets in good condition. A similar period will be given for return of deposit.

Special attention of bidders is called to "Information for Bidders" in the Public Works Specifications, and to the special provisions applying to projects financed with federal funds. Award of a contract is subject to priorities and allocations under the Defense Production Act of 1950, as Amended, and all regulations issued thereunder.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of the State of New York, Commissioner of Taxation and Finance, for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bond shall conform to the provisions of the Highway Laws, as set forth in "Information for Bidders."

The right is reserved to reject any or all bids.

J. BURCH McMORRAN
SUPT. OF PUBLIC WORKS

See other Official Proposals on pages 198, 199, 200, 208

OFFICIAL PROPOSALS

Bids: June 5, 1959.

City of New Rochelle, New York
Improvements to
Municipal Incinerator

(Project No. 10-42a-P1)
CONTRACT I
GENERAL CONSTRUCTION
CONTRACT II
FURNACE CONSTRUCTION
CONTRACT III
CHIMNEY CONSTRUCTION
CONTRACT IV
PLUMBING CONSTRUCTION
CONTRACT V
HEATING & VENTILATING
CONSTRUCTION
CONTRACT VI
ELECTRICAL CONSTRUCTION
NOTICE TO BIDDERS

1. Sealed proposals for performing all work in connection with the General Construction, Furnace, Chimney, Plumbing, Heating & Ventilating and Electrical Construction, Contracts I, II, III, IV, V, and VI, respectively, are hereby invited and will be received by the DEPUTY DIRECTOR OF PUBLIC WORKS of the CITY OF NEW ROCHELLE, N. Y. at City Hall Annex* until 11:00 AM EDST June 5th, 1959, then publicly opened and read immediately thereafter. Contractors may submit proposals for any one or more contracts.

*2nd Floor
30 Church St.
New Rochelle, N. Y.

2. The work will consist of providing all labor, materials, equipment and incidentals and performing all operations required for the construction of improvements to the Municipal Incinerator including all General Construction, Furnace, Chimney, Plumbing, Heating & Ventilating and Electrical Construction. The furnaces & appurtenances may be inspected on Monday mornings between 7:00 A.M. and 9:00 A.M.

3. Drawings, specifications, bidding and contract documents may be examined at the office of the Engineers, Leonard S. Wegman Co., Grand Central Terminal, New York, 17, N.Y. or at the office of the Incinerator Superintendent at the Incinerator, Foot of Morgan Street and obtained from the Bureau of Engineering, 28 Wildcliff Drive, New Rochelle, N. Y. at a deposit of $75.00 per set. Full refund will be made to actual bidders for return of one set in good condition and a 50% refund for return of each additional set in good condition returned within two weeks after closing date for receipt of bids.

4. Each bid must be accompanied by a Bid Security in the form of an acceptable Bidder's Bond or a certified check payable at sight to the City of New Rochelle, N. Y., in an amount not less than Five Per Cent (5%) of the amount of the total bid. Such Bid Security will be returned to all except the three lowest formal Bidders within five (5) days after the formal opening of bids, and the remaining Bid Securities will be returned within two (2) days after the Owner and the accepted Bidder has executed the contract, or if no contract has been executed, within thirty (30) days after the date of opening of bids, upon demand of Bidder at any time thereafter so long as he has not been notified of acceptance of his bid. If the Bidder to whom the contract is awarded does not execute the contract and furnish the required bond within fifteen (15) days after receipt of notice of award, the aforesaid Bid Security shall be paid to the City of New Rochelle, N. Y.

5. The Owner reserves the right to reject any or all bids, to waive any informality in bids received and to accept that bid which in its judgment best serves the interests of the City.

CITY OF NEW ROCHELLE, NEW YORK
By: ARTHUR F. JONAS, P.E.
DEPUTY DIRECTOR OF PUBLIC WORKS
Dated 5/21/59

Bids: May 21, 1959

Power Authority of
the State of New York

NIAGARA-ADIRONDACK TIE LINE
ADVERTISEMENT FOR PROPOSALS
FOR
THE FURNISHING AND DELIVERY
OF
345 KV TRANSMISSION LINE TOWERS
FOR
NIAGARA-ADIRONDACK
TRANSMISSION LINE
SPECIFICATIONS NO. PA-9-1m
CONTRACT NO. ALP-1-m

NOTICE TO CONTRACTORS: The POWER AUTHORITY OF THE STATE OF NEW YORK will receive sealed proposals for the furnishing and delivery f.o.b. applicable destination of structural steel for 345 kv transmission line towers for the portion of the Niagara-Adirondack Transmission Line which extends from Niagara County to Monroe County, New York, until 11:30 A.M. Eastern Daylight Saving Time, on the 21st day of May, 1959, at the Authority's office, 18th Floor, The Coliseum Tower, 10 Columbus Circle, New York 19, New York, at which time and place proposals will be publicly opened and read aloud.

Bids will be received for the design, testing, fabrication and delivery of structural steel weighing approximately 7,000 tons for the transmission line towers, including body and leg extensions and foundation steel. Delivery will be required commencing on or before August 1, 1959 and completed on or before October 1, 1960.

Plans, Specifications and Proposal Forms for the work may be obtained from the Power Authority of the State of New York, at the Coliseum Tower, 18th Floor, 10 Columbus Circle, New York 19, New York, upon application and prepayment of a fee of Ten ($10.00) dollars per initial set of contract documents, and five ($5.00) dollars per set for additional sets, no part of which shall be refunded. Plans, Specifications and Proposal Forms for the work will be on file in the Authority's Office and in the offices of the Engineer, Uhl, Hall & Rich, 230 Congress Street, Boston 10, Massachusetts and may be inspected by prospective bidders during office hours.

Bids must be made and returned in duplicate in accordance with instructions contained in the Information for Bidders. Guarantee will be required with each bid in an amount not less than 20 percent of the gross sum bid.

The right is reserved to reject any or all bids.

W. S. CHAPIN
GENERAL MANAGER

Bids: June 2, 1959

Power Authority of
The State of New York

ADVERTISEMENT FOR PROPOSALS
FOR THE
FURNISHING AND DELIVERY
OF
INTAKE GATE AND STOPLOG GUIDES, SILLS AND HEAD BEAMS
FOR WATERWAYS
SPECIFICATIONS NO. PA-N-23-2c
NIAGARA CONTRACT NO. NP-2c

NOTICE TO CONTRACTORS: The Power Authority of the State of New York will receive sealed proposals for the furnishing and delivery thereof f.o.b. destination, Niagara Falls, Niagara County, New York, of the intake gate and stoplog guides, sills and head beams for the Waterways intake structure until 10:30 A.M. Eastern Daylight Saving Time on the 2nd day of June, 1959, at the Authority's Office, 18th Floor, The Coliseum Tower, 10 Columbus Circle, New York 19, New York at which time and place proposals will be opened and read aloud.

The work consists of fabricating, furnishing and delivery thereof of approximately 332 tons of embedded structural steel guides, sills and head beams for the intake gates and stoplogs for the waterways.

Delivery of the above items will be required on or before October 1, 1959.

Plans, Specifications and Proposal Forms for the work may be obtained from the Power Authority of the State of New York, at The Coliseum Tower, 18th Floor, 10 Columbus Circle, New York 19, New York, upon application and prepayment of a fee of Ten Dollars ($10.00) per initial set of contract documents, and Five Dollars ($5.00) per set for additional sets, no part of which will be refunded. Plans, Specifications and Proposal Forms for the work will be on file in the Authority's office, 18th Floor, The Coliseum Tower, 10 Columbus Circle, New York 19, New York, and in the office of the Engineer, Uhl, Hall & Rich, 230 Congress Street, Boston 10, Massachusetts, and may be inspected by prospective bidders during office hours.

Bids must be made and returned in duplicate in accordance with instructions contained in the Information for Bidders. Guarantee certified check or bid bond will be required with each bid in an amount not less than 20 percent of the gross sum bid.

The right is reserved to reject any or all bids.

W. S. CHAPIN
GENERAL MANAGER

Bids: May 28, 1959

Power Authority of
the State of New York

ADVERTISEMENT FOR PROPOSALS
FOR
LANDSCAPING
AND
CONSTRUCTION OF ROADS, WALKS AND TERRACES
AT LONG SAULT DAM, OVERLOOKS, BEACHES
AND OTHER LOCATIONS
NEAR MASSENA
ST. LAWRENCE COUNTY, NEW YORK
SPECIFICATIONS NO. PA-3-11-941
ST. LAWRENCE CONTRACT NO. 5

NOTICE TO CONTRACTORS: The Power Authority of the State of New York will receive sealed proposals for Landscaping and Construction of Roads, Walks and Terraces at Long Sault Dam, Overlooks, Beaches and Other Locations near Massena, St. Lawrence County, New York, until 10:30 A.M. Eastern Daylight Saving Time on the 28th day of May, 1959 at the Authority's office, 18th Floor, The Coliseum Tower, 10 Columbus Circle, New York 19, New York, at which time and place the proposals will be publicly opened and read aloud.

The estimated quantities of the principal items of work are as follows:

Foundation Course Gravel	4,670 cu. yds.
Bituminous Macadam	1,030 cu. yds.
Asphaltic Concrete Pavements	670 cu. yds.
Concrete in Curbs & Structures	144 cu. yds.
Concrete Terraces and Walks	320 cu. yds.
Topsoiling	101 acres
Seeding	150 acres

All bituminous paving and all concrete work shall be completed on or before September 1, 1959, and all other work under the contract shall be completed on or before November 1, 1959.

Plans, Specifications and Proposal Forms for the work may be obtained from the Power Authority of the State of New York, 18th Floor, The Coliseum Tower, 10 Columbus Circle, New York 19, New York, upon application and prepayment of a fee of Ten Dollars ($10.00) per initial set of contract documents and Five Dollars ($5.00) per set or additional sets, no part of which will be refunded. Plans, Specifications and Proposal Forms for the work will be on file in the Authority's office and in the offices of the Engineer, Uhl, Hall & Rich, 230 Congress Street, Boston 10, Massachusetts, and may be inspected by prospective bidders during office hours.

Bids must be made and returned in duplicate in accordance with instructions contained in the Information for Bidders. Guarantee will be required with each bid in an amount not less than 20 percent of gross sum bid.

The right is reserved to reject any or all bids.

W. S. CHAPIN
GENERAL MANAGER

Many contractors depend entirely upon the

OFFICIAL PROPOSAL COLUMNS

of

Engineering News-Record

for Opportunities to bid. They might not see your announcements if printed elsewhere

You undoubtedly want their bids on your contracts. Make sure of them on your next contract.

The cost is only $2.40 a line per issue.

OFFICIAL PROPOSALS

Bids: May 25, 1959.

Govt. of District of Columbia Dept. of Highways & Traffic, D. C.

May 1, 1959. SEALED PROPOSALS will be received in Room 404, 499 Pa. Ave. N.W., Wash. 1, D.C., until 2 P.M. EDT, May 25, 1959, and then publicly opened and read for CONSTRUCTING THE 12TH STREET EXPRESSWAY, C STREET, S.W., TO CONSTITUTION AVE., STRUCTURE No. 172, Federal Aid Project No. S-7214(). consisting of approx. 100,500 cu. yds. Unclassified Excavation, 57,600 cu. yds. Backfill and Fill, 15,400 sq. yds. 8" RPC Conc. Base, 18,444 cu. yds. Class "B" Concrete, 2,700,000 lbs. Reinforcing Steel, 26,345 cu. ft. Class "A" Stone Masonry, 73,150 sq. ft. Tunnel Tile, and 824 cu. yds. Class "AA" Concrete. Minimum wage rates for this project have been predetermined as required by law and are set forth in the bid proposals. Proposal forms, plans and specifications obtainable from Supervisor, Bid & Contract Section, Procurement Office, D.C. Rm. 404, 499 Pa. Ave., N.W., upon deposit of a certified check for $50.00 per set, payable to D.C. Treasurer. (Phone NA 8-6000, Ext. 2378).

Bids: June 2, 1959.

Contract BT-120.019

THE PORT OF NEW YORK AUTHORITY
PORT AUTHORITY BUS TERMINAL
ALTERATIONS TO ROOM 2067
SUBURBAN CONCOURSE

Sealed proposals for performing alterations in Room 2067 on the suburban concourse of the Port Authority Bus Terminal at 40th Street and Eighth Avenue, will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 Eighth Avenue, New York 11, N.Y., until 2:30 P.M. on Tuesday, June 2, 1959, at which time said proposals will be opened and read in Room 1108.

Contract Documents may be seen at the office of the Assistant Chief Engineer for Design of the Authority, Room 1115, and copies will be furnished upon request. No deposit will be required but the documents shall be returned in good condition not later than forty days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
S. Sloan Colt, Chairman

New York, May 14, 1959.

Bids: June 4, 1959.

Notice to Contractors

STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N.Y.—Pursuant to the provisions of the Highway Law, Public Buildings Law, and special provisions, for projects financed with Federal Aid Funds, sealed proposals will be received until thirty o'clock A.M., daylight saving time, which is nine thirty o'clock A.M., eastern standard time, on the 9th day of June, 1959, by Henry W. Cohen, Director, Bureau of Contracts, 12th Floor, The Governor Alfred E. Smith State Office Building, Albany, N.Y., for the following projects:

County	Contract No.	Name
DISTRICT No. 1 (J. L. Morrison, District Engineer, 75 Broadway, Albany 1, New York)		
Albany	PASH-306 PAC-59-5	Albany South Side Route Pt. 1 City of Albany, Fuller Road Alternate Prin. I-0102(1)

Miles	Type	Deposit	Estimated Cost of Work
0.56	9" Cem. Conc. Pave. 24' to 24' Wide	$20,000 Plans $5	$181,000

Any projects in this letting that are on the Federal Aid highway systems are subject to the provisions of the Federal Aid Highway Act of 1956, being Public Law 627, 84th Congress, approved June 29, 1956, and are also subject to the applicable New York State statutes.

In compliance with the provisions of Section 220 Prevailing Rate of Wage, Public Law 627, the minimum wages to be paid laborers and mechanics are included in wage schedules that are set out in the bid proposal.

Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts, Albany, N.Y., and at the office of the District Engineers noted above, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

The deposit for Plans and Proposal Forms for each contract is indicated above. A refund will be made in full to bidders for return of one set, in good condition, within 30 days of award or rejection of bids. Refund for all other sets in good condition, submitted within 30 days of deposit.

Special attention of bidders is called to "Information for Bidders" in the Public Works Specifications and to the special provisions applying to projects financed with federal funds. Award of a contract is subject to priorities and allocations under the Defense Production Act of 1950, as Amended, and all regulations issued thereunder.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of the State of New York Commissioner of Taxation and Finance, for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bond shall conform to the provisions of the Highway Laws, as set forth in "Information for Bidders".

The right is reserved to reject any or all bids.

J. BURCH McMORRAN
SUPT. OF PUBLIC WORKS

Bids: June 10, 1959.

Broward County Port Authority, Florida

Sealed bids will be received until June 10th, 1959 for Excavation and Disposal of Dredged or Excavated Unclassified material from Areas East of Piers 2 and 4 and North of Pier 5 at Port Everglades, Florida.

The basic bid is for approximately 1,125,000 cubic yards of excavation and four (4) alternate items aggregating a total of approximately 2,850,000 cubic yards of excavation.

For particulars, address R. T. Stancliff, Port Manager, Broward County Port Authority, Fort Lauderdale, Florida.

Bids: June 2, 1959.

Advertisement for Bids Water Supply Project Fairfax, Virginia

Sealed proposals will be received for the construction of a Water Supply Project by the Town of Fairfax, Virginia at the Town Office, Layton Hall, Fairfax, Virginia, up to 2:30 P.M. EST, on the 2nd day of June, 1959, at which time and place all bids will be publicly opened and read aloud, on the following contracts:

Contract A: Dam & Impounding Reservoir
Contract B: Mixing Equipment
Contract C: Filter Plant Construction
Contract D: Filter Equipment
Contract E: Wash Water Tank
Contract F: Transmission Line
Contract G: Murray's Ford Bridge

The successful bidder on any of the foregoing contracts will be required to furnish a satisfactory performance bond in the amount of 100% of his contract.

The contract documents, including plans and specifications are on file at the office of the Town Engineer, Town Office, Fairfax, Va., and may be examined there or at the office of Alvord, Burdick & Howson, Engineers, Suite 1401, 20 North Wacker Drive, Chicago 6, Illinois, or at the office of Patton & Kelly, 403 W. Lee Highway, Fairfax, Virginia.

A copy of the contract documents, including plans and specifications may be obtained from either the office of Alvord, Burdick & Howson or Patton & Kelly upon a deposit of $25.00 for each of Contracts A, C, D or E and $15.00 for each of Contracts B, F or G. The entire deposit will be returned to contractors contingent upon the plans and specifications being returned in good condition within 15 days after the date of opening bids.

The right is reserved by the Town of Fairfax to reject any or all bids or to accept any bid considered advantageous to the Town.

Certified check, cash, government bonds, or bank drafts payable to the Town of Fairfax, Virginia, or a satisfactory bid bond executed by the bidder by a surety company in an amount equal to 10% of the bid shall accompany the proposal.

Bids may be withdrawn at any time prior to the scheduled time for opening bids, but not thereafter.

Bidders shall guarantee their proposals for a period of sixty (60) days after the time and date bids are specified to be opened.

Wm. M. Zollman, Jr.
Town Engineer
Fairfax, Virginia

Bids: July 7, 1959.

Invitation for Bids—No. YS-2-7

Kingdom of Thailand
Royal Irrigation Department
Bangkok, Thailand

The Royal Irrigation Department of the Kingdom of Thailand hereby invites sealed written bids for furnishing and delivering the following goods, equipment, and materials either to Contractor's shipping point or at Bangkok Wharf, Thailand, for the Bhumiphol Dam and Power Plant, Yanhee Multipurpose Project, Kingdom of Thailand in accordance with the Contract Documents, for:

Design, manufacture, and supervision of installation of four (4) Radial Gates, each with its hoist, controls, appurtenances, and other accessories required for field assembly and installation. The gates are each nominally 11.00 meters wide by 17.40 meters high.

Bids will be opened on 2 July 1959. Copies of Contract Documents, Invitation for Bids No. YS-2-7, may be obtained by qualified Bidders on written request addressed to:

Royal Irrigation Department
Attention: Thai Liaison Engineer
c/o Engineering Consultants, Inc.
1610 West Mississippi Avenue
Denver 23, Colorado

Each request must be accompanied by a check or money order, payable to the Royal Irrigation Department, in the amount of U. S. $10.00 for each copy of the Contract Documents requested. The remittance is non-returnable.

M. L. Najati Kunjara
Director General
Royal Irrigation Department
Kingdom of Thailand
Bangkok, Thailand

U. S. Government

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Invitation No. 18-2195) will be received at Denver, Colorado, until 2 p.m. Mountain Standard Time, June 11, 1959, for furnishing one 10-inch floating, rotating cutter-head type hydraulic suction dredge, with floating and shore discharge lines, for Peralta Main Canal Setting Basin, Middle Rio Grande Project, New Mexico. Delivery is desired within 180 days. For particulars, address Bureau of Reclamation, Building 53, Denver Federal Center, Denver 25, Colorado. Floyd E. Dominy, Commissioner.

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. 18-2197) will be received at Civic Auditorium, Carson City, Nevada, until 2 p.m., Pacific Daylight Saving Time, (1 p.m. Pacific Standard Time), June 16, 1959, for furnishing labor and materials for construction of Prosser Creek Dam, Washoe Project, Nevada-California. Location near Truckee, California, in Nevada County. Principal items are 1,530,000 cu. yds. excavation, 1,707,000 cu. yds. embankment, 4,150 cu. yds. concrete, and other work. Completion time 450 days. For particulars, address Bureau of Reclamation, P. O. Box 640, Carson City, Nevada; or Building 53, Denver Federal Center, Denver 25, Colorado. Floyd E. Dominy, Commissioner.

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. 18-2198) will be received at Camp White, near Medford, Oregon, until 10 a. m., Pacific Standard Time, June 4, 1959, for furnishing labor and materials for earthwork and structures, for South Fork Collection Canal; Daley Creek Collection Canal; Grizzly Creek Channel Improvement; and three diversion dams, Talent Division, Oregon, Rouge River Basin Project. Location east of Medford, Oregon. Principal items are 277,000 cu. yds. excavation; 8,600 cu. yd. earth lining; 5,700 cu. yds. riprap and rock fill; 930 cu. yds. concrete; and other work. Completion time 400 days. For particulars, address Bureau of Reclamation, P. O. Box 386, Camp White, Oregon; or Building 53, Denver Federal Center, Denver 25, Colorado. Floyd E. Dominy, Commissioner.

OFFICIAL PROPOSALS

Bids: June 16, 1959.

Office of the Director of the Department of Public Works of the City of Newark, New Jersey

City Hall, Newark, N. J.
Date: May 14, 1959

Job No. 1162 Division of Water Supply. Sealed proposals will be received at 10:00 A.M. Eastern Daylight Saving Time on Tuesday, June 16, 1959, by the Director of the Department of Public Works, in Room 305, City Hall, Newark, New Jersey, and then and there at 10:00 A.M. publicly opened and read for the following work which is a part of the Charlotteburg Reservoir Project:

CONSTRUCTING THE FARBER BROOK DIVERSION WORKS, CONTRACT ORP-2

The work under this Contract includes but is not limited to the following:

(a) Construction of a diversion dam approximately 225 feet long. This dam will consist of a rock sloped concrete spillway 126 feet long with two abutments each 14 feet long and two stone paved earth embankments on the ends 50 feet and 25 feet long. It will contain a 24 inch diameter sluiceway and other appurtenances.

(b) Construction of a diversion channel approximately 2550 feet long between Farber Brook and Canistear Reservoir. The diversion channel will be of trapezoidal shape, 7 feet high, with a 7 foot base and 1:1½ side slopes, and will be paved with stone blocks on a gravel base.

The Drawings, Specifications, Instructions and Information for Bidders, the Bid or Proposal, Contract and Bond forms are on file and may be seen at the office of the Division Engineer, Division of Water Supply, Department of Public Works, Room 305, City Hall Annex, Newark, and at the office of Parsons, Brinckerhoff, Hall & Macdonald, Engineers, 165 Broadway, Room 2402, New York, New York. Copies may be obtained at the office of Parsons, Brinckerhoff, Hall & Macdonald upon deposit of twenty-five dollars, which sum will be refunded upon return of the Drawings and Specifications in good condition within one month after receipt of bids or upon submittal of a formal bid.

An Agreement of Surety signed by a Surety Company authorized to do business in New Jersey shall accompany each proposal for execution of Contract on award thereof. Said Agreement of Surety shall be in conformity with the requirements specified in Instructions and Information for Bidders.

The Contract will be awarded to the lowest responsible Bidder. The City reserves the right to reject any and all bids or waive informalities therein.

All proposals are subject to the requirements of all laws and City ordinances affecting same. The Bidder's attention is called to Section 2:58 of the City Administrative Code.

By direction of the Director of the Department of Public Works of The City of Newark.

George W. Andress
Director, Department of Public Works

See other Official Proposals on pages 198, 199, 200, 208

Read the Official Proposal Columns of ENGINEERING NEWS-RECORD This Week and Every Week

EMPLOYMENT NATIONAL COVERAGE OPPORTUNITIES

DISPLAYED RATE:

The advertising rate is $39.20 per inch for all advertising appearing on other than a contract basis. Frequency rates quoted on request.

An advertising inch is measured ⅞" vertically on a column—3 columns—30 inches to a page.

Subject to Agency Commission.

MAY 28TH ISSUE CLOSES MAY 18TH

UNDISPLAYED RATE:

$2.40 per line, minimum 3 lines. To figure advance payment count 5 average words as a line.

Position Wanted ads take ½ of above rate.

Box numbers—count as 1 line.

Discount of 10% if full payment is made in advance for 4 consecutive insertions.

Not subject to agency Commission.

Send NEW Ads and Inquiries to Classified Advertising Division of ENGINEERING NEWS-RECORD, P. O. Box 12, N. Y. 36.

ADDRESS BOX NO. REPLIES TO BE SENT TO
Classified Advertising Division of
ENGINEERING NEWS-RECORD
Send to office nearest you
NEW YORK 36 P. O. Box 12
CHICAGO 11 100 W. Monroe St.
SAN FRANCISCO 4 68 Post St.

• POSITIONS VACANT

Asst. Prof. of Civil Engineering to teach fluid mechanics. Applicant must have MS in CE. Write to John A. Oakey, N. D. State College, Fargo, N. D., giving personal record and minimum acceptable 9 months' salary.

Graduate Civil Engineer with 3 to 4 years highway experience for permanent position in West Virginia. Duties include office work and supervision of survey. Send resume and salary requirements to P-1511, Engineering News-Record.

Senior Cost Engineer. Must be familiar with the Uniform System of Accounts for Electric Utilities. Duties will consist of analyzing completed major construction projects for an Electric Utility. Experience with the Federal Power Commission or a State Public Service Commission would be desirable. Some experience with the Projects Record Department of any Electric Utility would also be an asset. Please send complete resume of experience, references, salary requirements, and availability. Indianapolis Power & Light Co., Monument Circle, Indianapolis 9, Ind., Indiana Employment Division.

Assistant City Engineer. Civil Engineer de- sired by the City of Sandusky. Salary open. Liberal vacation, sick leave, holiday, group insurance and retirement benefits. Must be college graduate or registered engineer. Submit complete application and desired salary to the City Engineer, Sandusky, Ohio.

Construction Supervisors—Thorough knowl- edge of building construction, grading and paving. Background of minimum of 5 years Field work essential. Projects are located in New Jersey, Pennsylvania and Maryland and cover extended expansion program. Submit resume in detail listing projects handled, location and magnitude. State salary required. All replies will be treated in strict confidence. P-1512, Engineering News-Record.

• POSITIONS VACANT

Resident Engineer Wanted. Graduate engineer with experience in supervision of construction on water, sewerage, steam power and or building construction. Location generally midwest, but assignments may be to other areas of U. S. Established midwest consulting engineering firm. Reply in detail to P-1513, Engineering News-Record.

Experienced Architects and Architectural Draftsman. Excellent opportunity with established consulting firm in Middle West. State education, experience and required salary. Reply to P-1515, Engineering News-Record.

Sanitary Engineer to direct Division of Sani- tation with generalized program in well established County Health Department. Population 50,000. Liberal vacation, sick leave, retirement, longevity benefits. Cattaraugus County Health Department, 302 Lincoln Street, Olean, New York. Salary $6,000 to $7,800.

Graduate Engineer for key position. Mini- mum of 5 years experience in estimating, purchasing and expediting in heavy commercial and industrial building construction. Must have administrative ability. Location in Nebraska-Kansas area. Send complete resume, references and recent photograph. P-1514, Engineering News-Record.

Plant Manager—Structural fabricating shop Pittsburgh area. Must know labor relations, shop and drawing room practice. Salary open. Reply in detail to P-1503, Engineering News-Record.

Two Teachers, Department of Mechanics and Engineering. One department head, Ph.D. mechanical engineering preferred. Degree in physics for second position. B.S. or M.S. also considered. Teach mechanics, strength of materials, thermodynamics, applied mechanics, general physics. Salary and rank dependent on qualifications. Apply Professor Montana School of Mines, Butte, Montana.

Experienced Estimator to relocate in Minne- sota capable to estimate heavy construction and highway projects. Bridge, concrete, steel, sewer, open. Submit resume and requirements. Permanent position with highly responsible firm. Address P-1505, Engineering News-Record.

• POSITIONS VACANT

Superintendent wanted for sewer, water, grading and concrete jobs of small and medium size. Ability to estimate and expedite as well as civil engineer training desirable. Salary commensurate with ability to produce. Locate Illinois. Established company. Please furnish resume stating education, experience and salary requirements. P-1529, Engineering News-Record.

General Sup't. to take full charge of Highway Project including Excavation and Rock, in New England. Reply stating experience, etc. to P-1502, Engineering News-Record.

The City of Wilton Manors will accept appli- cations for the position of Director of Public Works. Preferably a graduate civil engineer. Must have experience in the construction and maintenance of municipal works, including water distribution systems, pavement and drainage projects. Duties include supervision of water department, approval of subdivision development plans, etc. Mail applications to the office of the City Clerk, 524 N. E. 21st Court, Wilton Manors, Fort Lauderdale, Florida.

Engineers with extensive experience in the operation and maintenance of computer control systems are needed by the Air Defense Command at salaries starting at $5,525 and $6,355 a year. The openings are at electronic air defense installations and Division Headquarters in the Southern and North Central parts of the country. The power, heat and air conditioning equipment is State installations is large and complex and includes diesel generating equipment operated in parallel, power plant switch gear equipment, high pressure fire-tube steam boilers with associated equipment, refrigeration and air conditioning equipment of over 1,000 ton capacities and other complicated equipment. Heating, ventilating and control systems. Engineers employed in a Division Headquarters will function as a staff engineer in such fields as Electrical, Mechanical, Heating, Air Conditioning, Domestic Civil and Civil Planning and General. Structural, Sanitary, Paving, Engineering. Inquiries about these positions and applications should be directed to the Director of Civilian Personnel, Headquarters, Air Defense Command, Ent Air Force Base, Colorado Springs, Colorado.

(Continued on opposite page)

BUILDING DESIGNERS

Positions available in consulting firm for Engineers, Architects and Architectural Draftsmen experienced in building design. Send personal information and experience record to

STANLEY ENGINEERING COMPANY
Hershey Building Muscatine, Iowa

• POSITIONS VACANT
(Continued from opposite page)

Wanted General Construction Superintendent—General contractor specializing in industrial and commercial construction for more than 25 years needs alert forceful, well organized experienced man to take full charge of field operations in southern California. State fully your qualifications. P-1665, Engineering News-Record.

Town Engineer—Southington, Conn., population 17,000, semi-rural with rapid growth and all the problems you want to tackle. Must have broad municipal experience and qualify to register in Connecticut. Recently established position with July 1 budget for staff of three plus summer help. Up to $8,000 for best man. Resume to Director of Finance, Town Hall.

Draftsmen (2)—Experienced in heavy construction field, to draw isometrics. Job location in midwest, long term. Send resume and salary required. Reply P-1661, Engineering News-Record.

Office Engineer—Heavy construction job in midwest. Long term employment. Send resume and salary required. Reply P-1668, Engineering News-Record.

Field Engineer—Experienced on dams and locks, must be able to handle field engineering and inspection. Long term. Send resume and salary required. P-1673, Engineering News-Record.

Sanitary engineer preferably with several years construction experience. Work in upper New York State with 61-year old consulting engineering firm. Hydraulic and sanitary. Send qualifications to P-1684, Engineering News-Record.

Project Manager—C. E. Experienced in Heavy Constr. and Flood Control. Location generally New York State. Good opportunities and permanent position for right man in growing firm. P-1688, Engineering News-Record.

Wanted experienced promotional Engineer preferably one experienced in Building Code requirements for chimneys. Reply giving full information regarding age, education, experience, salary expected—Clay Flue Lining Institute, 711 Eleventh Street, Oakmont, Allegheny Co., Pa.

Wanted—Experienced man for Secretary-Manager of Delaware Chapter of the Associated General Contractors. State experience and salary desired. Reply to P. O. Box 1784, Wilmington 99, Delaware.

• POSITIONS WANTED

Structural Engineer—Extensive National Experience. Registered. Desires executive position or partnership. Midwest or western location. PW-1439, Engineering News-Record.

Paving & Materials Engr., BCE, SM. 4 overseas Airfield projects controlling soils, asphalt, concrete, surveying, independent responsibility, managed personnel. PW-1447, Engineering News-Record.

Prestressed Concrete Plant Manager—MSCE—Experienced Engineer capable of designing, building and managing an efficient prestressed concrete plant. PW-1482, Engineering News-Record.

Project Engineer: Location and construction of railways, highways, bridges, tunnels, docks, townsites, etc., in Latin America or south. Fluent Spanish. Technical ability and experience rarely equalled. Highest references. PW-1495, Engineering News-Record.

Supt. or Foreman, General Construction. PW-1524, Engineering News-Record.

Field-office Engineer—layout, supervision computations and drafting. Experienced in Municipal and Heavy Construction. Desires to relocate. P. O. Box 53-296, Miami, Fla.

Project Manager. Proven 20 Year Record heavy construction, U. S. and foreign. PW-1561, Engineering News-Record.

(Continued on the following page)

DESIGNERS—McKEE

Has immediate openings for experienced designers of

PRESSURE VESSELS
HEAT EXCHANGERS
HEATERS

For employment at our Cleveland offices.

Send detailed resume to

G. VICTOR HOPKINS

ARTHUR G. McKEE & Co.
2300 Chester Ave. Cleveland 1, Ohio

ENGINEER

A long established firm of hydro engineers has an opening for a young man with Master's Degree in Structural Engineering. Some experience in arch dam design or advance structural analysis required. Computer programming experience desirable. Must be a capable man willing to improve by outside study. Please send complete personal and experience record to Personnel Manager.

HARZA ENGINEERING COMPANY
400 W. Madison St. Chicago 6, Illinois

WANTED IMMEDIATELY
HEAVY CONSTRUCTION SUPERINTENDENT

Experience in New York State road work preferred but not essential. Should be well grounded in excavation, paving, drainage structures, etc. Excellent opportunity for a take charge man who can produce positive results in bidding & executing highway work. Salary open. Write or telephone.

Daniel McConville, Jr.

McCONVILLE, INC.
Post Office Box 297 Ogdensburg, New York
Telephone 724

UTILITY VALUATION ENGINEER
FAR EAST

BS Electrical or Civil, age 35-55, 12 years business experience, 8 in inventory and valuation of electric utility property. Responsibility for planning and directing substantial field work. Foreign experience highly desirable.

Contract for 8 to 12 months. Salary subject to negotiation. Liberal benefits including housing and bonus. Dependents may accompany, expenses paid.

Send resume and salary required

P-1628, Engineering News-Record
Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

CIVIL ENGINEERS

Permanent positions starting
$489 through $842

HYDRAULICS
GROUNDWATER
DESIGN

Health insurance and retirement benefits.

RIVERSIDE COUNTY FLOOD CONTROL
& WATER CONSERVATION DISTRICT
3558 9th Street Riverside, Calif.

BUILDING CONSTRUCTION SUPERINTENDENTS

Now accepting applications from top flight men with substantial successful experience as superintendents on varied competitively bid construction projects, primarily governmental, for general contractors. Must be fully qualified to assume full responsibility as superintendents on individual complex projects in the $10 million plus range, involving supervision of concrete work and coordination of mechanical, electrical, and other sub contract work.

Exceptional opportunity to offer such men now and in the future. Presently operating on a nation-wide basis and expanding our operations substantially, we can offer aggressive and hard working superintendents excellent opportunities in this expansion program.

Write full details, covering experience including cost figures on previous jobs, training, education, personal data, references, and salary requirements to

Personnel Director
BLOUNT BROTHERS
CONSTRUCTION COMPANY
P. O. Box 949 Montgomery, Alabama

FOUNDATION ENGINEER

Position open for engineer with extensive experience on caissons, underpinnings and foundation installations. Mail full details on experience and salary requirement to

Room 1214
RAYMOND CONCRETE PILE COMPANY
140 Cedar St. New York 6, N. Y.

CIVIL ENGINEERS (2)

- Starting Salary to $12,000
  (potential in high five figures)
- Career Opportunity
- Large National Retail Organization
- Top Responsibility Job
- Room To Advance
- Contact With Leading Mgt. Men
- Varied Nature Of Work
- Excellent Company Benefits

QUALIFICATIONS REQUIRED: Top caliber men having attained the degree with minimum 5 years practical experience in design and planning. Full knowledge of all phases of commercial building construction, including awarding of contracts, estimating and field inspection. Limited travel. Location New York, N. Y.

P-1622, Engineering News-Record
Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

STATE OF SOUTH DAKOTA
Engineering Opportunities

Openings in the South Dakota Department of Highways and the State Engineer's office present permanent opportunities for recent engineering graduates and experienced engineers in the following classifications and salary brackets:

DEPARTMENT OF HIGHWAYS

Structural Designer	$5,220 - $6,420
Structural Draftsman	$4,320 - $5,220
Civil Engineer, Highway, Survey, Design	$4,800 - $5,820
Construction	$4,800 - $5,820

STATE ENGINEER'S OFFICE

Deputy State Engineer	$7,200
Engineering Technician	$4,200
Architectural Draftsman	$4,200
Inspector, Grade II	$4,200
Inspector, Grade I	$3,600

Benefits include sick leave with pay, paid vacation, military leave with pay, available hospitalization plan.

• • •

Applications for Highway Department openings write: Personnel Director, Department of Highways, Pierre, S. D.

Applications for State Engineer's office to: Director of Employment, State Capitol, Pierre, S. D.

• *POSITIONS WANTED*
(Continued from preceding page)

Civil Engineer, 29. Office, Field Experience, General Contractor. PW-1606, Engineering News-Record.

Construction Supt. Building Construction. Experience of 25 years includes bidding, estimating and purchasing of subs and materials. PW-1623, Engineering News-Record.

Construction Manager and General Superintendent, 25 years experience of bidding to completion on public and industrial buildings. Desire permanent relocation. PW-1611, Engineering News-Record.

Civil Engr., BSCE '51, 32, registered in Virginia, 5 years varied design, const., sales, & management experience. Interested in challenging structural design position or responsible sales position selling engineered products. Will relocate. Available immediately. Resume upon request. R. Shelton, Buffalo, N. Y., Export 2-8700 or PW-1609, Engineering News-Record.

Pilot —Commercial instrument—Production Expeditor. Presently employed on Latin-American project nearing completion. Over 10,000 hours. Sober, dependable family man. Detailed resume on request. PW-1620, Engineering News-Record.

Construction Supt. General Construction. PW-1596, Engineering News-Record.

BSCE, Young, Single, 2½ years A.F. Installation Engineer, desire and experience, seek responsible position. PW-1632, Engineering News-Record.

Construction District Manager—B. Eng., Age 43, twelve years on all types building construction. Thorough knowledge bid to completion, used to heavy responsibility. Have fine record of successfully completed projects. Desire position in northeast with advancement or future participation. Available June. Top references. PW-1586, Engineering News-Record.

Construction Engineer—Graduate CE, licensed. Heavy construction, missile projects, buildings. Wide experience in the successful preparation and processing of construction claims on state and government work. Desires part time work with contractor. PW-1555, Engineering News-Record.

Open letter to old line general contracting co. in need of key man to handle estimating. Company should be small but set up to handle large heavy industrial and commercial projects on a best bid basis. This man is a registered, graduate engineer, 10 competent able, loyal, dependable and has character and integrity. Desires responsible position where ability will be recognized and rewarded. Qualified by background, training and experience for top level management. PW-1629, Engineering News-Record.

Civil Engineer, eight years experience Consulting Municipal Engineering. Age 31, married, no children desire position with progressive firm. Reply PW-1602, Engineering News-Record.

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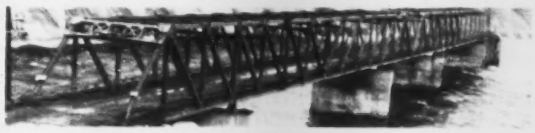

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13	14 to 33		
493	34 to 35	T-1A TEES	
483	36 to 40		
178	41 to 44	36	34 to 40
203	45 to 49	18	41 to 45
626	51 to 52	19	51 to 52

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Notice of Letting
New Castle County, Delaware

SEALED PROPOSAL addressed to the President of the New Castle County Council, New Castle County, Delaware, for the construction of sanitary sewer mains and treatment facilities for Sanitary Sewer System Contract No. 1 and Contract No. 2 will be received and publicly opened by the County Engineer in Room 301 of the New Castle County Engineering Building on the Kirkwood Highway until 2 P.M., E.S.T., Monday, June 8, 1959. All bids will be opened and read in the Hearing Room of the New Castle County Engineering Building on said day. The work under Contract No. 1 includes sanitary sewers including approximately 6,100 linear feet of 8-in. sewer, 1,000 linear feet of 10-in. sewer, 1,850 linear feet of 12-in. sewer, 1,120 linear feet of 15-in. sewer, 1,120 linear feet of 18-in. sewer, the construction of a pumping station together with appurtenances, 2,000 linear feet of cast iron pipe force main, construction of a sewage treatment imhoff tank and sludge beds with appurtenances, 1,000 linear feet of 8-inch force main sewer, the alteration of the existing pumping station at Governor Bacon Health Center together with the construction of approximately 2,000 linear feet of small cast iron pipe force main and performing related work such as manhole construction, etc. This is a grant aid project from the Public Health Service in connection with the project.

Each bid shall be accompanied by a certified check or satisfactory bid bond in the amount of five per cent of the total bid. Plans and specifications may be obtained at the New Castle County Engineering Building on the Kirkwood Highway, Room 301, or at Whitman, Requardt and Associates, 1304 St. Paul Street, Baltimore 2, Maryland on or after May 15, 1959 upon payment of the sum of $20.00 which will not be refunded.

The Levy Court reserves the right to reject any and all bids received, and to waive any informalities in the bids received.

JOHN TAYLOR
COUNTY ENGINEER

Bids June 2, 1959.

Village of Baldwinsville, New York
Sewage Treatment Works

Sealed proposals will be received by the Village Clerk at the Village Office, Baldwinsville, New York, until 8:00 P.M. on the 3rd day of June 1959, at which time they will be opened and read aloud. The proposals are for Contract No. 1 General and Contract No. 2 Electrical covering the construction of certain additions and alterations to the Baldwinsville Sewage Treatment Plants.

Plans, Specifications and Proposal forms may be obtained at the Village Office, Baldwinsville, New York upon depositing $50.00 with said Village Clerk to be held in escrow by their return, pursuant to law, and may be examined at the office of the Engineer, Donald E. Stearns, P.E. (Civil and Sanitary Engineers, 90 Albany Street, Cazenovia, New York.

After opening and reading said bids said Village reserves the right to reject any or all bids and reserves the right also to award a contract by accepting all or any bid complying with said Plans, Specifications and Terms to the lowest responsible bidder furnishing the requested security after advertisement hereof, pursuant to law.

The final awarding of contract is subject to the approval of the United States Department of Health, Education and Welfare.

Walter F. Palmer, Village Clerk
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Sounding the Alarm

THE REGULARITY AND MOUNTING CRESCENDO of dire predictions about the future of our cities warrants more than normal attention by all elements of the construction industry. The sounding of such alarms is, of course, not a new phenomenon; cities have always been imperfect mechanisms subject to improvement. Nor have engineers and construction people generally been inattentive to the needs for improvement: safe water supplies, paved streets, fireproof buildings, electric lights and the countless amenities contrast sharply with the disease-ridden, dark and dingy towns of fifty years ago.

The reason why the city problem deserves more than normal concern now is that it is taking on national character and dimension. Many more people in the U.S. live under urban than under rural conditions today. Moreover, it is estimated that fifty million more people will require an urban environment before 1985.

Another reason for increased attention to the city problem is that now—more than ever—influential voices from the business community, the academic world and governmental circles are being raised in criticism of things as they are. Planners, architects and engineers are the butt of much of this criticism—for acts of commission and omission, for lack of cooperation among themselves, for failing to provide leadership and so on.

Justified or not, the nature of these criticisms should be known. Justified or not, the criticism should also be welcome as an indication of growing support for better city planning, since all too frequently it has been a lack of interest and support from these groups that has stymied progress when it was within reach.

To keep abreast of all that is being said and written about the city of the future is no easy task. Now and then, however, expert opinion appears in a form that is manageable to read, as well as being instructive and stimulating. This is the case with a new book, Cities in the Motor Age (The Viking Press, N. Y.) by Wilfred Owen of the Brookings Institution.

The book is Mr. Owen's summary and evaluation of a conference of experts convened last year by the Connecticut General Life Insurance Co. The question before the conference was: How can we increase the efficiency and livability of our cities through the national highway program? It is a question that every highway engineer and city planner should try to answer, and the book should be a useful tool.

Another useful publication that focuses on this problem of urban development is the November, 1957, issue of the ANNALS OF THE AMERICAN ACADEMY OF POLITICAL AND SOCIAL SCIENCE (Philadelphia). Here some twenty recognized students of the problem contribute their thoughts to a symposium entitled, Metropolis in Ferment.

Engineers, architects, city planners and public officials will find both of these publications useful and stimulating. Also they may find them disturbing because of the implied indictment that technical leadership in the field of urban development has not yet come to grips with the problem as it should.

Choosing the Lesser Evil

AT HEARINGS on federal highway spending by the House Public Works Committee last week (p. 25), Rep. George H. Fallon offered Highway Administrator Bertram D. Tallamy a choice he found distasteful: a bogged down highway program or deficit financing to keep the program going. Mr. Tallamy, who was before the committee expressing Administration opposition to deficit financing, called himself "not qualified to choose."

Mr. Tallamy's refusal to pick the lesser of what he considers two evils is understandable; he wants federal financing of the Interstate program back on a pay-as-you-go basis. Perhaps Congressman Fallon's question wasn't quite cricket, perhaps it was loaded. Or, on the other hand, maybe it was a very practical thing he asked. For present indications are that Congress will refuse to increase gas taxes or transfer excise tax revenues and instead vote some kind of short-term deficit financing to bolster the Highway Trust Fund.

It was indeed a rather practical choice the Congressman offered the Highway Administrator. Mr. Tallamy ought to have found himself qualified to state his preference. Accept deficit financing, or let the highway program bog down? Bertram Tallamy should be qualified to answer that one. And, in fact, he has already answered it, for he has been telling of late in his public comments of the serious loss of momentum the program will suffer if it is let run short of money (ENR Mar. 26, p. 28). He admitted at last week's hearing that the 41,000-mile Interstate system will be but two-thirds finished by its planned 1972 completion date if Congress does not soon—somehow—get up more money.

Congressman Fallon was only being practical. He, too, started with the premise that it would be a "tragic misfake" to let the Interstate Highway program bog down. Temporary deficit financing is surely better than that.

Finding the Old Timers

MINDFUL OF THE HAZARDS of using the superlative, ENGINEERING NEWS-RECORD has published (ENR Apr. 30, p. 30) a list of 117 general contractors believed to be the "oldest" in the construction industry. All listed have been in business continuously since 1918 and before. We've now heard from a few who should have been on that list and wish we could hear from all others before publishing additional names of old timers.

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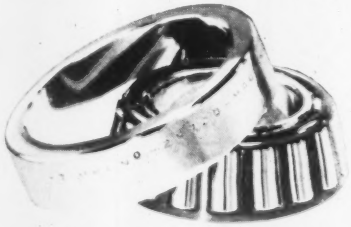

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